



# ***M-10e TT/DT Thermal Transfer Printer***



## ***Service Manual***

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Warning: This equipment complies with the requirements in Part 15 of FCC rules for a Class B computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps are necessary to correct the interference.

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## ***Overview and Specifications***

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### ***1.1 Overview***

The SATO M-10e Printers Service Manual provides information for installing and maintaining M-10e Direct Thermal/Thermal Transfer printers. Step-by-step maintenance instructions are included in this manual with typical problems and solutions. It is recommended that you become familiar with each section in this manual before installing and maintaining the printer.

The M-10e printer is a wide carriage thermal printer designed specifically to address the need for large high resolution labels. It can print labels as large as 10.5 inches x 16.5 inches with a resolution of 305 dpi (dots per inch) at speeds up to 5 inches per second, making it ideal for large compliance label applications. All printer parameters are user programmable using the front panel controls and DIP switches. All popular bar codes and 14 human readable fonts, including vector and two raster fonts, are resident in memory providing literally thousands of type styles and sizes.

The M10e is available in two versions. The M10eDT is a direct thermal only version and must use thermally sensitive paper to print. The M10eTT is a thermal transfer model and has provisions for using a thermal transfer ribbon. It can also print in a direct thermal mode if the ribbon is not used.

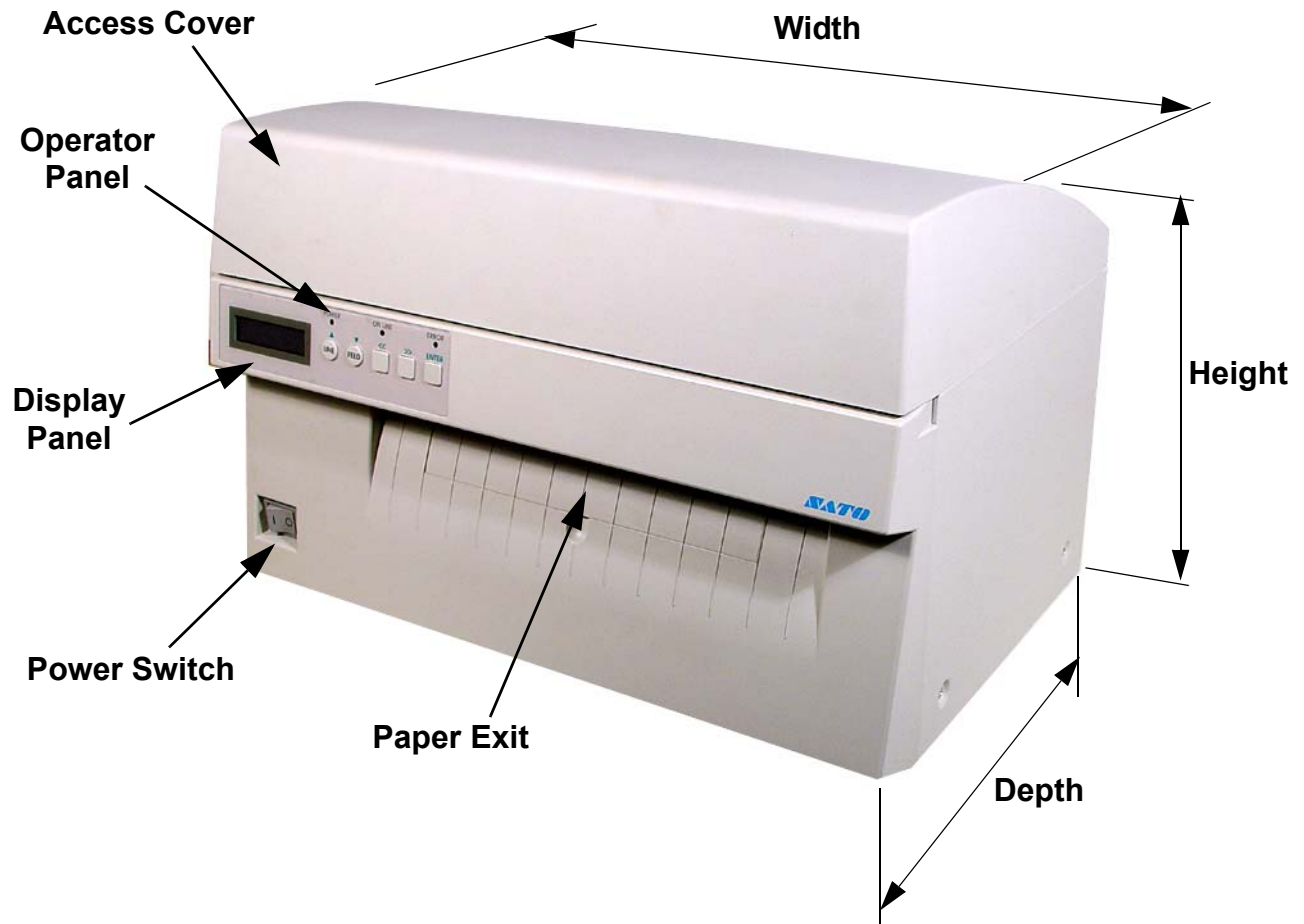
The printer uses the standard SATO Printing Language command codes. The only differences between it and other SATO printers are the allowable values representing the print positions on the label. These values are specified in “dots” and will vary depending upon the resolution of the printer and the amount of memory available for imaging the label. The allowable range is specified in the SATO “e” Printer Programming Reference. This commonality makes it easy to convert labels from one SATO printer without having to create an entirely different command stream. There are some caveats that must be observed though to compensate for the different resolution print heads. The effects of the different print resolutions are best illustrated by taking a label designed for a 305 dpi printer and sending the command stream to a 609 dpi printer. The label printed will be an exact one half scale, including the fonts, bar code dimensions and line length/widths. The only exceptions are the Postnet bar code and OCR-A and OCR-B fonts that have only one legal size. The printer resolution is automatically compensated for by the various printers. Conversely, a label designed for a 609 dpi printer and sent to its 305 dpi cousin will be twice as large. It probably will be “truncated” if the resulting size is larger than the maximum allowable for the printer.

The sections in this manual cover the following:

- *Section 1. Overview and Specifications*
- *Section 2. Configuration*
- *Section 3. Interface Specifications*
- *Section 4. Electrical Checks and Adjustments*
- *Section 5. Mechanical Adjustments*
- *Section 6. Replacement Procedures*
- *Section 7. Factory Resets*
- *Section 8. Troubleshooting*
- *Section 9. Optional Accessories*
- *Section 10. Parts List*



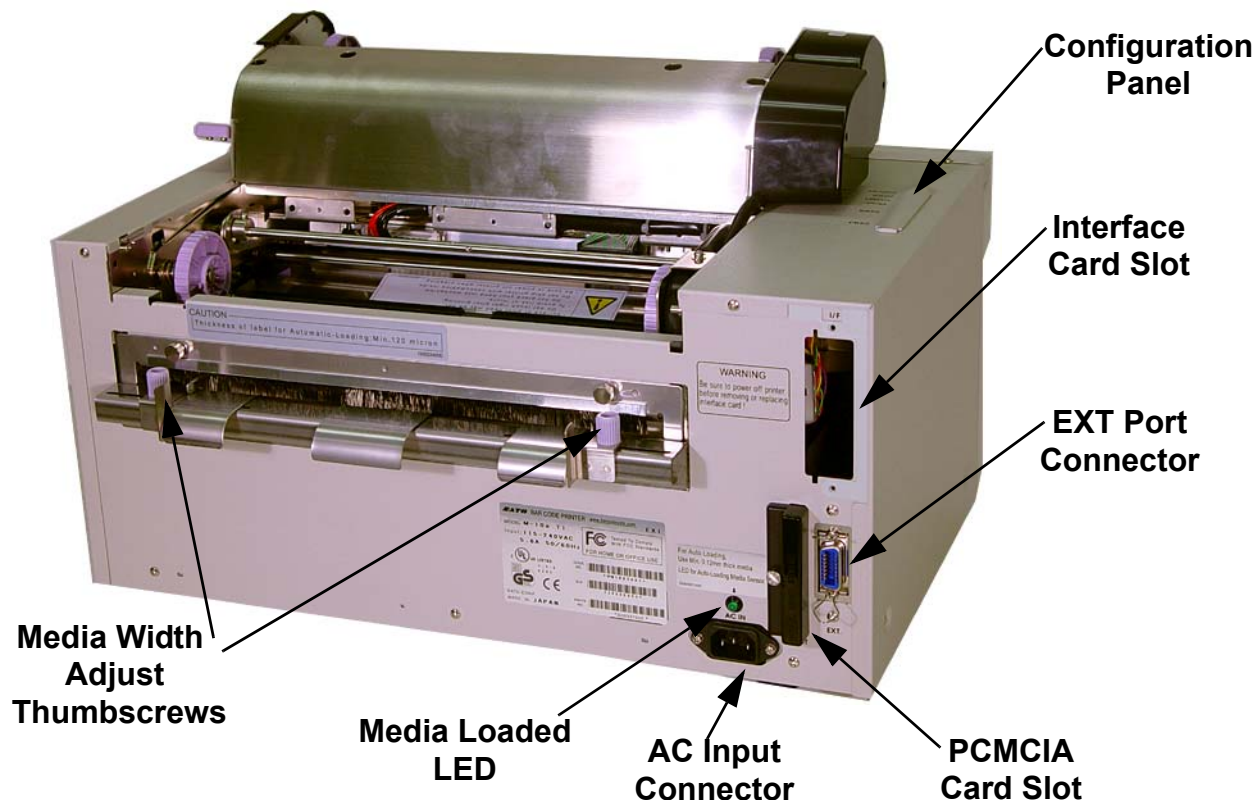
## 1.2 Components



Dimensions	M-10e TT	M-10e DT
Wide	18.7 in. (475 mm)	18.7 in. (475 mm)
Deep	12.3 in. (313.4 mm)	12.3 in. (313.4 mm)
High	12.6 in. (319.2 mm)	10.8 in. (274.2 mm)
Weight	50.7 lbs (23 kg)	50.7 lbs (23 kg)
Power Requirements		
Voltage	100V (+/- 10%) 240V +/- 10%) 60 Hz (+/- 1%)	
Environmental	Operating: 41 <sup>0</sup> to 104 <sup>0</sup> F (5 <sup>0</sup> to 40 <sup>0</sup> C) Storage: 23 <sup>0</sup> to 140 <sup>0</sup> F (-5 <sup>0</sup> to 60 <sup>0</sup> C) Relative Humidity: 30 to 90% non-condensing	

## Components

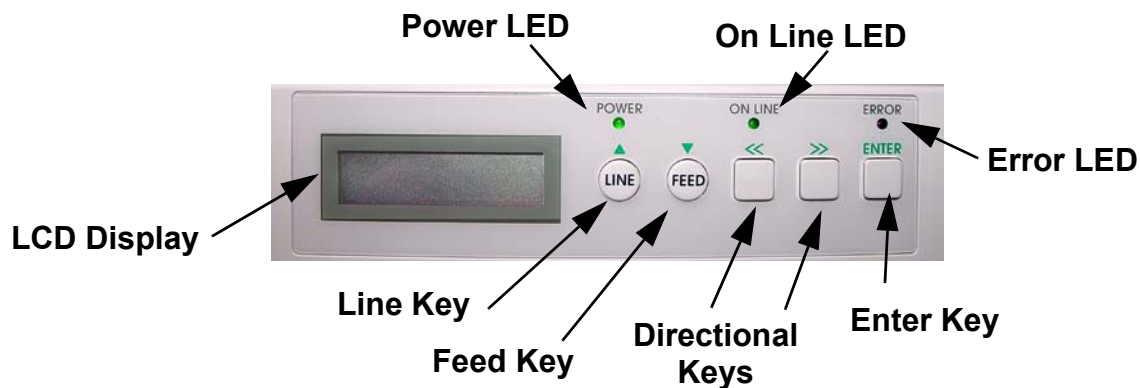
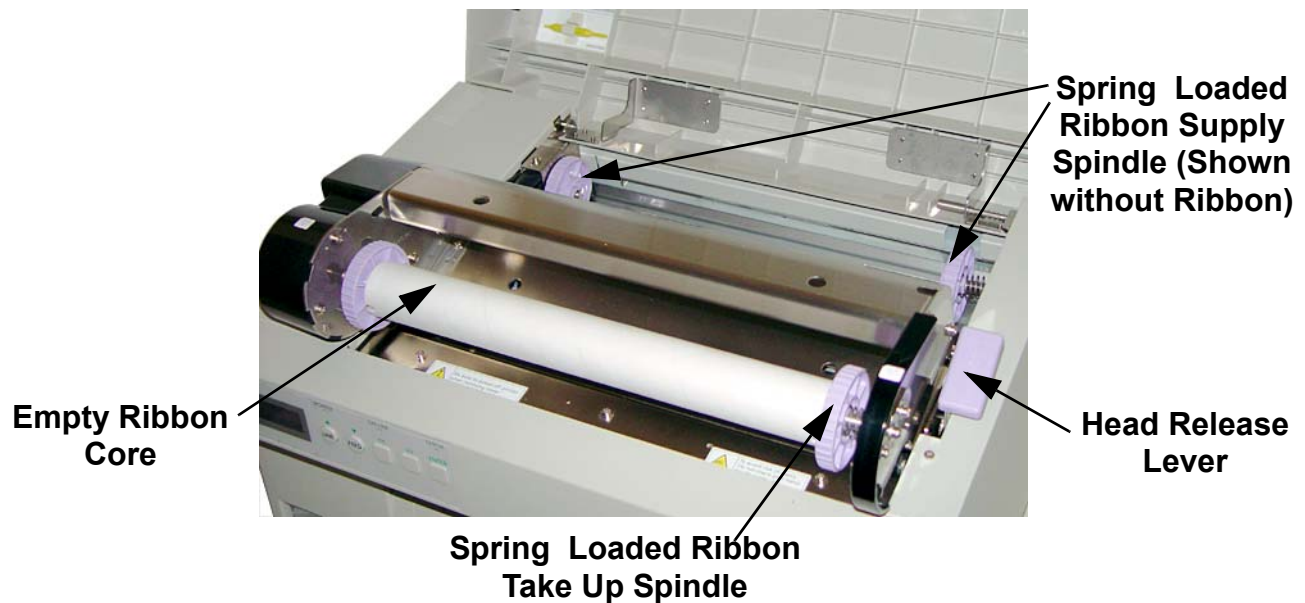
### BACK OF PRINTER



<b>POWER SWITCH</b>	To turn power On or Off
<b>CONFIGURATION PANEL</b>	Potentiometers and DIP switches to configure the printer and make setup adjustments.
<b>OPERATOR PANEL</b>	To set up the various configurations and to display dispensing quantity and the various alarms.
<b>INTERFACE CARD SLOT</b>	Slot to plug in an interface adapter. An adapter must be connected before the printer is operational. The adapter types available are: <ul style="list-style-type: none"> <li>• RS232C Serial I/F Module, DB-25</li> <li>• IEEE1284 Parallel I/F Module, AMP 57-40360</li> <li>• Universal Serial Bus I/F Module</li> <li>• Ethernet 10/100 BaseT I/F Module</li> <li>• RS-422/485 I/F Module, DB-9</li> </ul>
<b>EXT PORT CONNECTOR</b>	External signal connector, external control of print cycle.
<b>PCMCIA CARD SLOT</b>	One slot for optional PCMCIA Cards
<b>AC INPUT CONNECTOR</b>	Input 115V, 50/60 Hz connector. Use power cable provided.

## Components

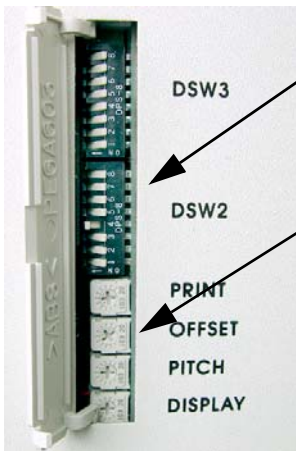
### FRONT OF PRINTER



### OPERATION PANEL

<b>LCD DISPLAY</b>	2 Line x 16 Character display.
<b>POWER LED</b>	Illuminated when power is applied.
<b>ON LINE LED</b>	Illuminated when printer is On-Line.
<b>ERROR LED</b>	Illuminated when errors have occurred.
<b>LINE KEY</b>	Switches the printer On-Line or Off-Line. It can also be used as a Pause function key to stop label during the printing process. Also used as an UP cursor control.
<b>FEED KEY</b>	To feed one blank label. When On-Line, the printer will print another copy of the last label. Also used as a DOWN cursor control.
<b>DIRECTIONAL KEYS</b>	Used to move the cursor to the left or to the right.
<b>ENTER KEY</b>	Selects the setting.

## Components



### Dip Switches

### Potentiometers

The DIP switches and Potentiometers are located inside the cover and contains two 8-position DIP switches and three adjustment potentiometers. Adjustment procedures for these are listed in Section 2 Configuration.

### PRINT

The PRINT potentiometer is used to adjust the amount of heat (i.e. power) applied to the head for printing. It provides a continuous range of adjustment. Maximum print darkness is obtained by turning the potentiometer all the way clockwise and a maximum counterclockwise setting will give the lightest print.

**NOTE:** The PRINT potentiometer adjustment will affect the darkness in all the command code speed and darkness ranges.

### OFFSET (Backfeed)

When a label is printed, it must be correctly positioned for dispensing and application. The Backfeed adjustment is used to position the label so that it is fully dispensed and ready for application. It may then be necessary to reposition the next label before printing. The Backfeed (repositioning of the label) operation is enabled if DSW3-4 is in the Off position. If Backfeed is enabled, placing DSW3-1 is in the Off position, it will cause the backfeed operation to be performed immediately before each label is printed. If DSW3-1 is in the On position, the backfeed operation is performed as soon as the dispensed label has been printed and taken from the printer.

The amount of backfeed is controlled by the OFFSET potentiometer. When turned all the way clockwise, the amount of backfeed is +3.75 mm, and -3.75 when turned all the way counterclockwise.

1. Turn the printer on.
2. Press the LINE key to place the printer in the Off Line status.
3. Press the FEED key to feed out a blank label.
4. Adjust the position using the OFFSET potentiometer and feed another label by depressing the FEED key. Repeat this procedure until the label is fully released from the liner.

## Components

### PITCH

After the pitch has been set with the LCD Control Panel, it is sometimes desirable to make minor adjustments. This can be done using the PITCH potentiometer on the top panel. This potentiometer is set at the factory so that it has a range of  $\pm 3.75$  mm. The midpoint setting should have no effect on the pitch. Turning the potentiometer all the way clockwise should move the print position 3.75mm up towards the top edge of the label. Turning it all the way counterclockwise should move the print position down 3.75 mm., the amount of backfeed is +3.75 mm, and -3.75 when turned all the way counterclockwise.

1. While depressing the FEED key on the front panel, power on the printer.
2. When you hear one beep from the printer, release the FEED key and the printer will display a message on the LCD panel asking what type of Test Label you want to print.
3. Use the Cursor keys to step to the Configuration selection and press the ENTER key to accept the selection.
4. Use the Cursor keys to select the Test Label Size. After the size is selected, press the ENTER key to accept the selection and the printer will begin to print test labels continuously.
5. Adjust the PITCH potentiometer on the front panel until the first print position is at the desired location on the label. If the potentiometer does not have enough range, then you will have to change the pitch setting using the front panel display.
6. Press the FEED key to stop the printer.
7. To exit the Test Label mode, power off the printer and back on.

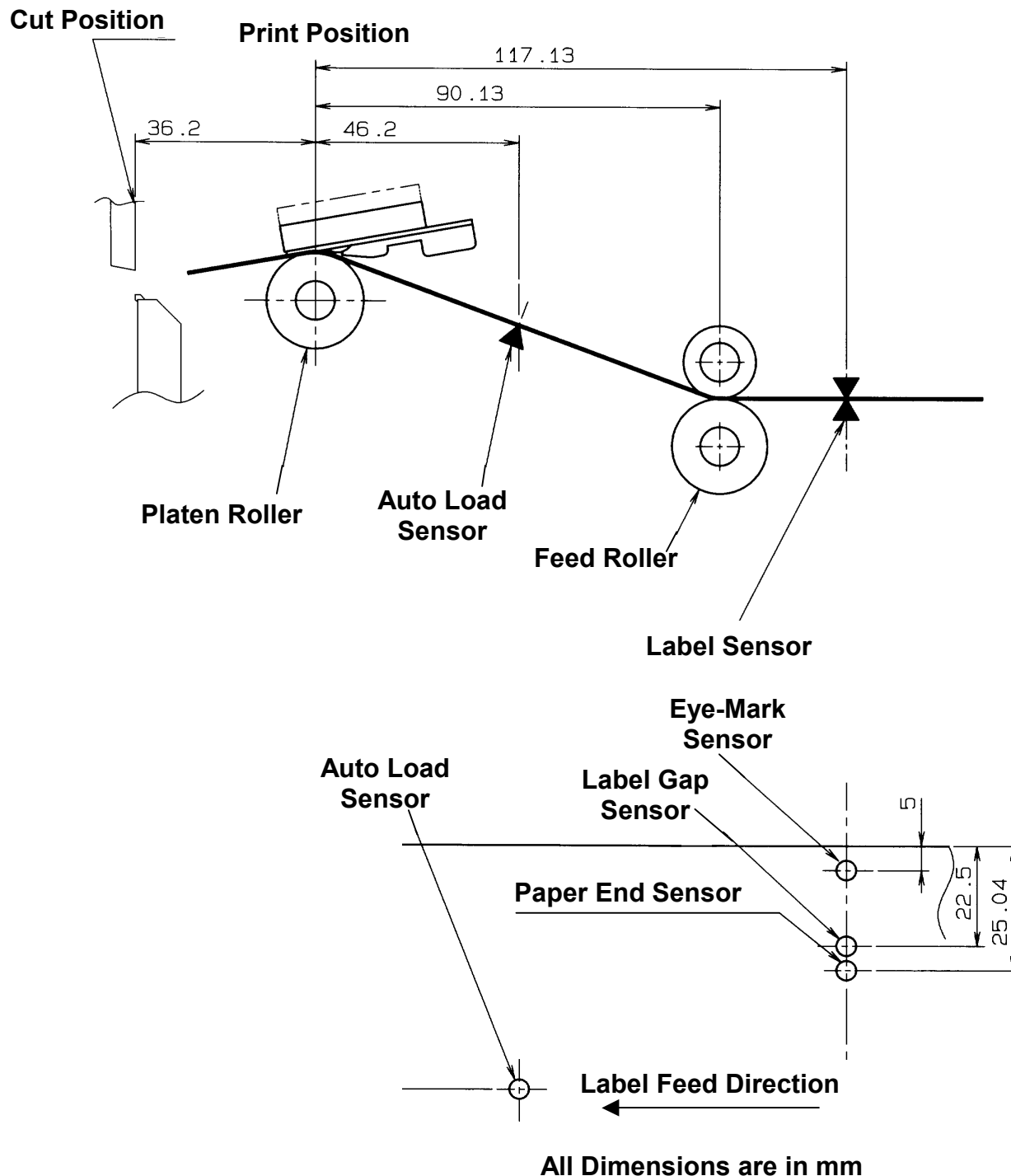
Adjusting the PITCH potentiometer will affect the stop position of the label.

### DISPLAY

This potentiometer is used to adjust the contrast of the LCD display for optimum viewing under various lighting conditions.

## 1.3 Sensors

The M10e printer can position labels using either a Label Gap (transmissive) or an Eye-Mark (reflective) sensor. The sensor used is selected by DSW2-2. The sensor position is fixed and cannot be adjusted. In addition, the signals from the sensors can be adjusted using the LCD panel to compensate for different liner opacities and/or Eye-Mark reflectance values.

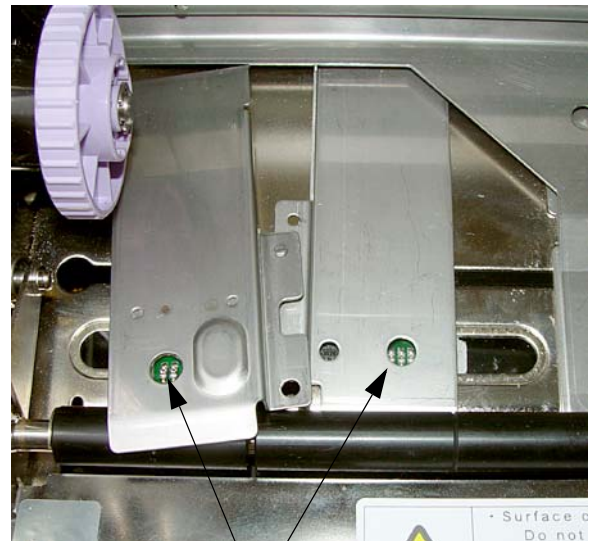
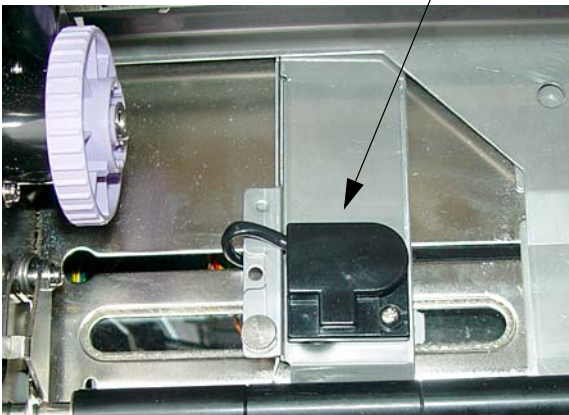




## Sensors

<b>LABEL GAP SENSOR (TRANSMISSIVE)</b>	Detects the edge of the label by looking through the backing paper which is translucent and detecting the presence of the opaque label. (SEN1 PCB), (SEN2 PCB)
<b>EYE MARK SENSOR (REFLECTIVE)</b>	Detects the light reflected from the bottom of the label liner. (SEN1 PCB)
<b>PAPER END SENSOR</b>	Senses when the media supply has been depleted. (SEN1 PCB), (SEN2 PCB)
<b>LABEL PENETRATING SENSOR</b>	<b>Description needed (SEN3 PCB)</b>
<b>RIBBON SENSOR</b>	Detects when ribbon has reached the end of the spool. (CSEN PCB)
<b>AUTO LOAD SENSOR</b>	Senses when the media is correctly positioned for auto loading.

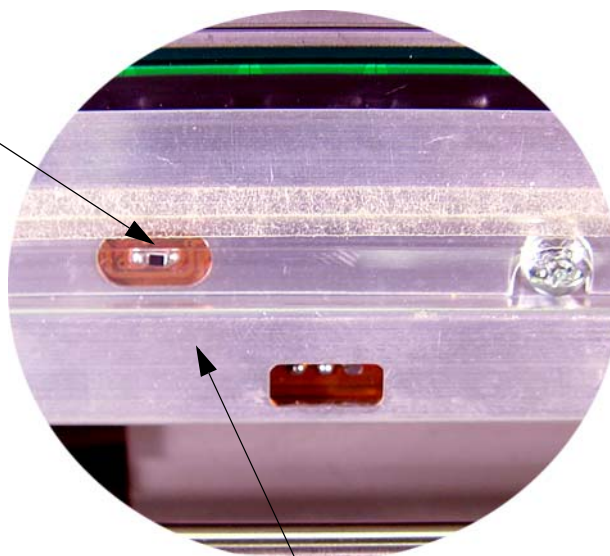
**SENSOR ASSEMBLY**  
Contains SEN2 PCB for  
Label Gap Sensor



**Underside  
showing sensors**

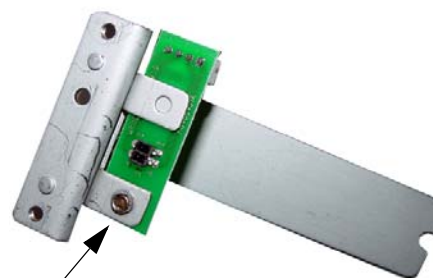
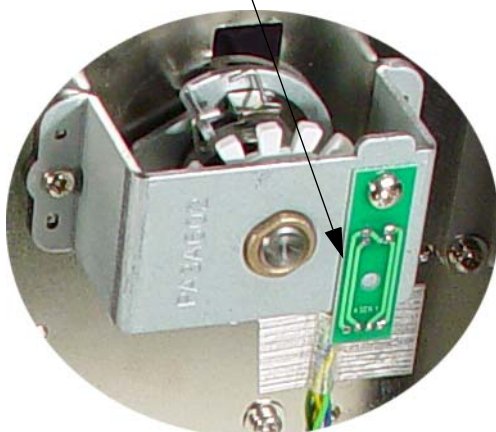
## Sensors

**AUTO LOAD SENSOR**  
Located under the Print  
Head Assembly



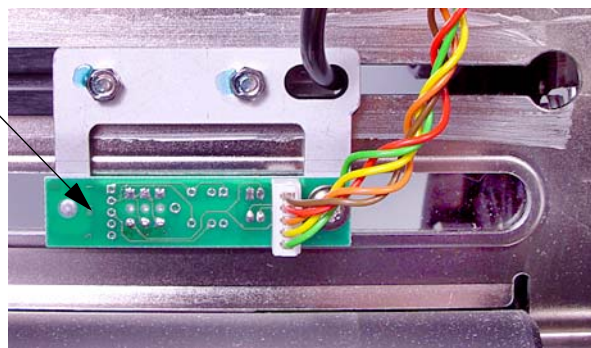
Under side of Print  
Head Assembly

**Ribbon Sensor**  
CSEN PCB



**Label Penetrating**  
**Sensor SEN3 PCB**

**Eye-Mark Sensor**  
**SEN1 PCB**





## **1.4 Ribbon**

Use only SATO thermal transfer ribbons which were formulated expressly for use in all SATO printers. Use of other than approved ribbons may result in unsatisfactory print quality and/or damage to the print head and may void your warranty.

## **1.5 Installation Considerations**

Printer operations can be affected by the printer environment. The location of the printer should be free from dust, humidity and sudden vibrations. To obtain optimum results from the printer, avoid locations influenced by:

- Direct or bright sunlight, since bright light will make the label sensor less responsive and may cause the label to be sensed incorrectly.
- Warm temperatures which can cause electrical problems within the printer. (See Section 1.9 Physical, Power, Environmental, & Approvals).

## 1.6 General Printer Specifications

SPECIFICATION	M10e
PRINT	
Method	Direct or Thermal Transfer
Speed (User Selectable)	3/4/5 ips 50 to 125 mm/s
Print Module (Dot Size)	..0033 in. .083 mm
Resolution	309 dpi 12 d/mm
Maximum Print Width	10.5 in. 266 mm
Maximum Print Length	16.5 in. 420 mm
MEDIA	
Minimum Width	5.16 in. 131 mm
Minimum Length	1.7 in. 43 mm
Maximum Width	11.8 in. 300 mm
Type	Roll or Fan-Fold Die Cut Labels Thermally Sensitive for M10eDT
Maximum Caliper	0.008 in. 0.21 mm
Roll OD (max) Face-In	7.8 in. 200 mm
Core ID (min)	3 in 76.2 mm
SENSING	
See-Thru	Fixed, 0.9 in. (22.5 mm) left of center
Reflective Eye-Mark	Fixed, 0.2 in. (5 mm) from left label edge
Continuous Form	Not Used
RIBBON	
Widths	6.5 in. (165 mm), 8.7 in. (220 mm), 10.7 in. (273 mm)
Length (max)	984 ft. (300 m)
Thickness	4.5 micron, Wound Face-In

## General Printer Specifications

SPECIFICATION	M10e
CONTROLS AND INDICATORS	
Power	Green LED
On-Line	Green LED
Error	Red LED
LCD Panel	2 Line x 16 Character
Auto-Load (Rear Panel)	Green LED
Power On/Off Switch	Front Casework
On/Off-Line Key	Front Panel
Feed Switch Key	Front Panel
Cursor Control Keys	Front Panel
Enter Key	Front Panel
POTENTIOMETER ADJUSTMENTS	
Print Darkness	Top Panel
Offset	Top Panel
Pitch	Top Panel
Display	Top Panel
INTERFACE CONNECTIONS <sup>(1)</sup>	
Parallel	IEEE1284 Standard
Serial	RS232C (9600 to 57600 bps) Standard RS422/485 (9600 to 57600 bps) Optional Ready/Busy or X-On/X-Off Flow Control Bi-directional Status
Universal Serial Bus	USB Ver. 1.1 Standard
Ethernet	10/100BaseT
PROCESSING	
CPU	32 Bit RISC
Flash ROM	4 MB
SDRAM	16 MB
Receive Buffer	2.95 MB
Memory Expansion	See Options and Accessories
(1) Only one interface module can be installed in a printer at a time.	

## 1.7 Character Fonts

SPECIFICATION	M10e
MATRIX FONTS	
U Font	5 dots W x 9 dots H
S Font	8 dots W x 15 dots H
M Font	13 dots W x 20 dots H
XU Font	5 dots H x 9 dots H (Helvetica)
XS Font	17 dots H x 17 dots W (Univers Condensed Bold)
XM Font	24 dots H x 24 dots W (Univers Condensed Bold)
OA Font	22 dots W x 33 dots H (OCR-A)
OB Font	30 Dots W x 36 dots H (OCR-B)
AUTO SMOOTHING FONTS	
WB	18 dots W x 30 dots H
WL	28 dots H x 52 dots H
XB	48 dots H x 48 dots W (Univers Condensed Bold)
XL	48 dots W x 48 dots H (Sans Serif)
VECTOR FONT	
	Proportional or Fixed Spacing Font Size 50 x 50 dots to 999 x 999 dots Helvetica, 10 Font Variations
AGFA® RASTER FONTS	
Font A	CG Times®, 8 pt to 72 pt
Font B	CG Trimvirate®, 8 pt to 72 pt
DOWNLOADABLE FONTS	
	Bit Mapped TrueType® Fonts with Utility Program
CHARACTER CONTROL	
	Expansion to 12X in either X or Y coordinates Character Pitch control Line Space control Journal Print facility 0°, 90°, 180° and 270° Rotation

## 1.8 Bar Codes

BAR CODE	M10e
SYMBOLOLOGIES	
Linear Bar Codes	Bookland (UPC/EAN Supplemental)
	EAN-8/EAN-13
	CODABAR
	CODE 39
	CODE 93
	CODE 128
	Interleaved 2 of 5 (I 2/5)
	Industrial 2 of 5
	Matrix 2 of 5
	MSI
	POSTNET
	UCC/EAN-128
	UPC-A/UPC-E
Two Dimensional	Data Matrix
	Maxicode
	PDF417
	Micro PDF
	Truncated PDF
	QR Code
	1:2, 1:3, 2:5, User Programmable
Bar Height	4 to 999 dots, User Programmable
Rotation	0°, 90°, 180° and 270° Rotation
OTHER FEATURES	
Sequential Numbering	Sequential numbering of both numerics and bar codes
Custom Characters	RAM storage for custom designed characters
Graphics	Dot addressable, SATO Hex/Binary, BMP or PCX formats
Forms Overlay	Overlay of predesigned forms in image buffer

## 1.9 Physical, Power, Environmental & Approvals

SPECIFICATION	M10e
PHYSICAL	
Wide	18.7 in. (475 mm)
Deep	12.3 in. (313.4 mm)
High	12.6 in. (319.2 mm)
Weight	50.7 lb. (23 kg)
POWER	
Input Voltage	Autoswitching 100-240 VAC +/-10%, 60 Hz
Power Consumption	560W Operating, 40W Idle
ENVIRONMENTAL	
Operating Temperature	41° to 104°F (5° to 40°C)
Storage Temperature	(-5° to 60°C)
Storage Humidity	30 to 90% RH Non-Condensing
Operating Humidity	30 to 80% RH Non-Condensing
Electrostatic Discharge	
REGULATORY APPROVALS	
Safety	UL, CSA, TUV
RFI/EMI	FCC Class B

## 1.10 Accessories and Options

ACCESSORIES AND OPTIONS	
PCMCIA MEMORY EXPANSION	One slot for PCMCIA Memory Card (up to 4 MB SRAM or 16 MB Flash ROM). Can be used for graphic file storage, print buffer expansion, format storage and downloaded fonts.
CALENDAR	An internal Date/Time clock that can be used to date/time stamp labels at the time of printing.
LABEL CUTTER	An attachment allowing labels to be cut at specified intervals. Controlled through programming.
COAX/TWINAX INTERFACE	Coax/Twinax Plug-In Interface module. Coax interface emulates an IBM 3287-2 printer with a standard Type A BNC connector. Twinax interface emulates IBM 5224, 5225, 5226 or 4214 printers with auto-terminate/cable through capabilities.
PARALLEL INTERFACE	IEEE1284 Bi-Directional Plug-In Interface Module
SERIAL INTERFACE	High Speed RS232 Plug-In Interface Module
USB INTERFACE	Universal Serial Bus Plug-In Interface Module
ETHERNET INTERFACE	10/100 BaseT Plug-In Interface Module

*All specifications subject to change without notice.*

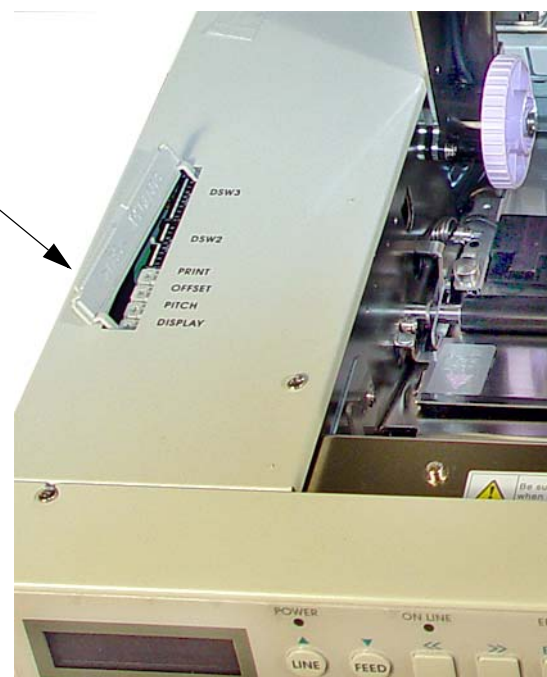
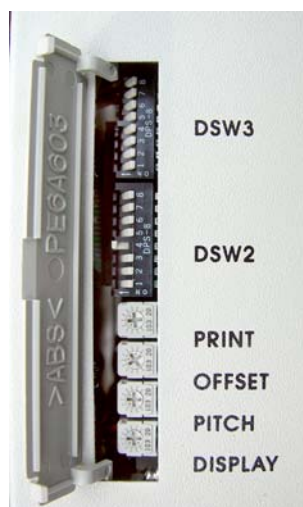




## Configuration

### 2.1 Dip Switch Settings

Two DIP switches (DSW2 & DSW3) are located on the top of the printer on the left side underneath the main cover. Swing open the access cover to change the switches.



These switches can be used to set:

#### DSW2

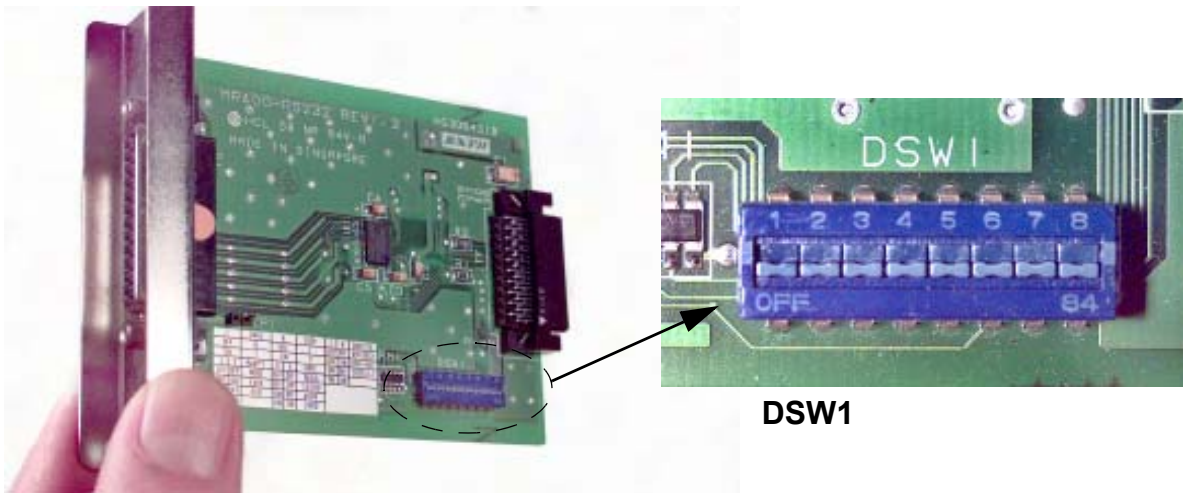
- Thermal Transfer or Direct Transfer Mode
- Sensor Type Mode
- Head Check Mode
- Hex Dump Mode
- Receive Buffer Mode
- Firmware Download Mode
- Protocol Code
- Serial Protocol

#### DSW3

- Operating Mode, Batch/Continuous/ Tear Off/Cutter/Reserved
- Label Pitch Sensor Enable/Disable
- Backfeed Position
- External Device Label Print Synchronization
- External Signal Type Selection
- Repeat Print Via External Signal

Dip Switch Settings

A third DIP switch (DSW1) is located on the RS232 Serial Interface Adapter card and is used to set the RS232C transmit/receive parameters.



Each switch is an eight section toggle switch. The On position is always to the top. To set the switches, first power the unit Off, then position the DIP switches. Finally after placing the switches in the desired positions, power the printer back on. The switch settings are read by the printer electronics during the power-up sequence. They will not become in effect until the power is cycled.

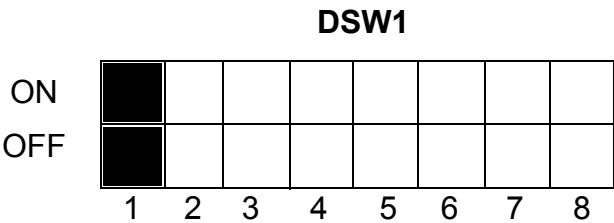
The toggle settings for DSW1 is as follows:

RS232 Transmit/Receive Setting

Data Bit Selection (DSW1-1):

This selection sets the printer to receive 7 or 8 data bits for each byte transmitted.

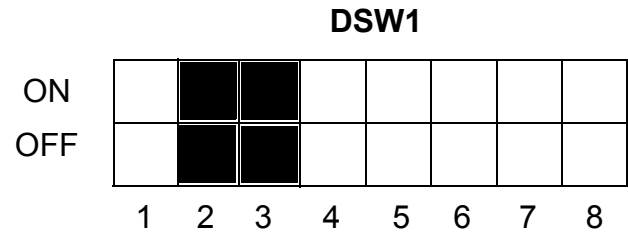
DSW1-1	SETTING
Off	8 Data Bits
On	7 Data Bits



### Parity Selection (DSW1-2, DSW1-3):

These switches select the type of parity used for error detection.

DSW1-2	DSW1-3	SETTING
Off	Off	No Parity
Off	On	Even
On	Off	Odd
On	On	Not Used



### Stop Bit Selection (DSW1-4):

This setting selects the number of stop bits to end each byte transmission.

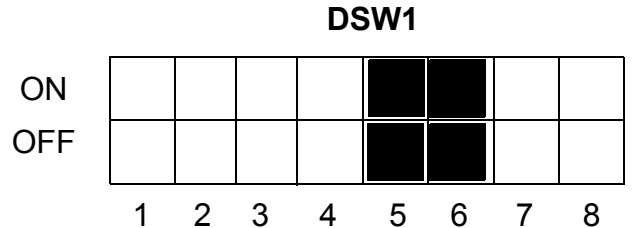
DSW1-4	SETTING
Off	1 Stop Bit
On	2 Stop Bits



### Baud Rate Selection (DSW1-5, DSW1-6):

This setting selects the data rate (bps) for the RS232 port.

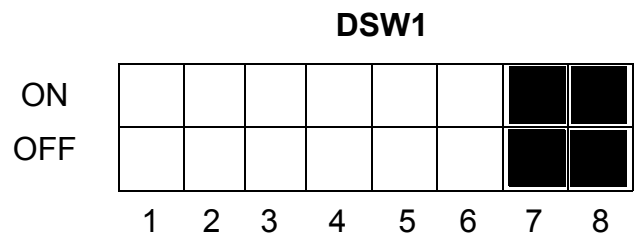
DSW1-5	DSW1-6	SETTING
Off	Off	9600
Off	On	19200
On	Off	38400
On	On	57600



### Protocol Selection (DSW1-7, DSW1-8):

This setting selects the flow control and status reporting protocols.

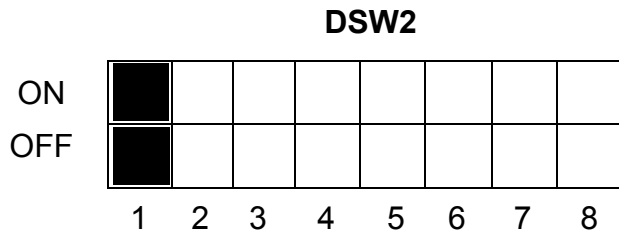
DSW1-7	DSW1-8	SETTING
Off	Off	Rdy/Bsy
Off	On	Xon/Xoff
On	Off	Bi-Com 3
On	On	Bi-Com 4



**Print Mode Selection (DSW2-1):**

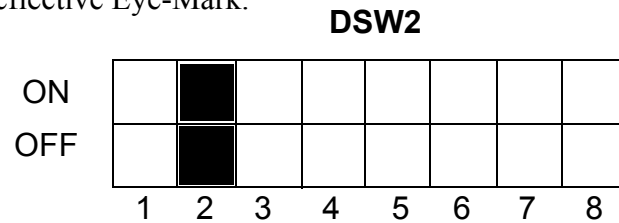
This setting selects between direct thermal printing on thermally sensitive paper and thermal transfer printing using a ribbon.

DSW2-1	SETTING
Off	Transfer
On	Direct Therm

**Sensor Type Selection (DSW2-2):**

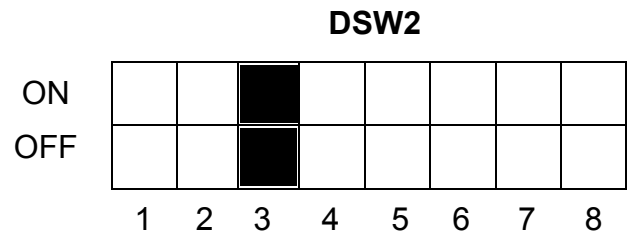
This setting selects between the use of a label gap or a reflective Eye-Mark.

DSW2-2	SETTING
Off	Gap
On	Eye-Mark

**Head Check Selection (DSW2-3):**

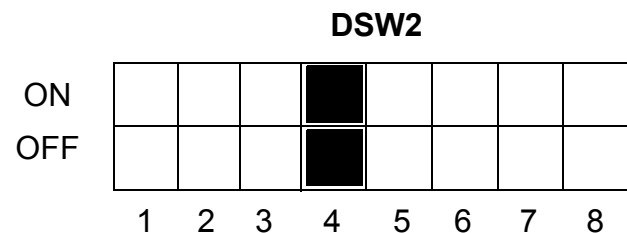
This setting checks the printer for head elements that are electrically malfunctioning.

DSW2-3	SETTING
Off	Disable
On	Enable

**Hex Dump Selection (DSW2-4):**

This setting selects the Hex Dump mode.

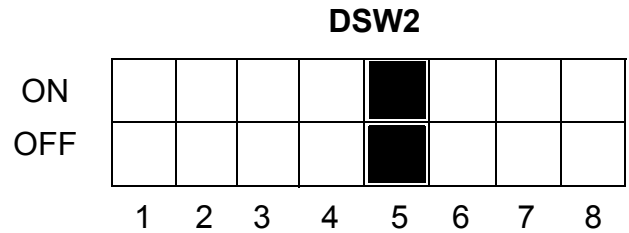
DSW2-4	SETTING
Off	Disable
On	Enable



### Receive Buffer Selection (DSW2-5):

This setting selects the operating mode of the receive buffer. See Section 3: Interface Specifications for more information.

DSW2-5	SETTING
Off	Single Job
On	Multi-Job



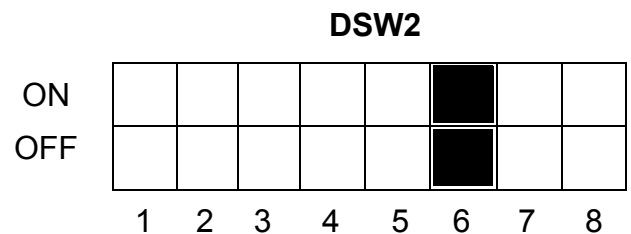
If a 10/100BaseT LAN card is installed, DS2-5 has the following definitions.

DSW2-5	SETTING
Off	ENQ Resopnse
On	Periodic Response

### Firmware Download (DSW2-6):

This selection places the printer in the Firmware Download mode for downloading new firmware into flash ROM.

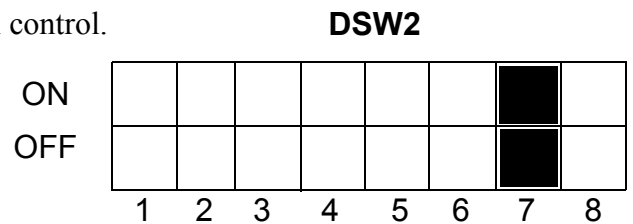
DSW2-6	SETTING
Off	Disabled
On	Enabled



### Protocol Code Selection (DSW2-7):

This setting selects the command code used for protocol control.

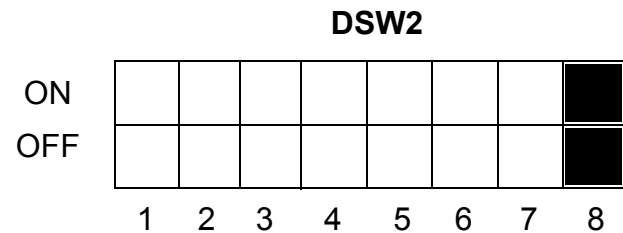
DSW2-7	SETTING
Off	Standard
On	Non-Std



**Serial Protocol Mode (DSW2-8):**

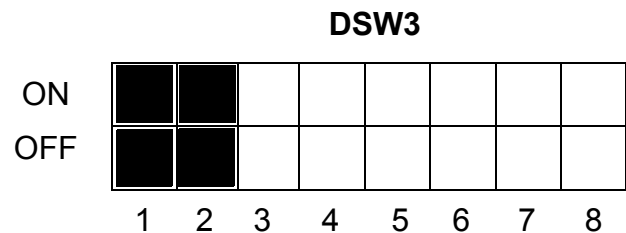
This setting is for emulating earlier series software commands and should be used only if problems are encountered when using existing software. This switch will also affect the settings selected by DSW1-7 and DSW1-8.

DSW2-8	SETTING
Off	Status 3 & 4 Enabled
On	Status 2 & 3 Enabled

**Backfeed Sequence Selection (DSW3-1, DSW3-2):**

Backfeed is used to correctly position the label for application and then retract the next label to the proper print position. This operation can be performed immediately after a label is printed and used, or immediately prior to the printing of the next label.

DSW3-1	DSW3-2	SETTING
Off	Off	Continuous
Off	On	Tear Off
On	Off	Cutter*
On	On	Reserved



\* Defaults to Continuous if cutter not installed.

**Label Sensor Selection (DSW3-3):**

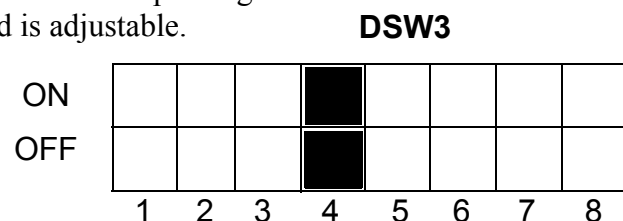
This setting enables or disables the Label Sensor. If the sensor is enabled, it will detect the edge of the label and position it automatically. If it is disabled, the positioning must be under software control using Line Feed commands.

DSW3-3	SETTING
Off	Sensor Used
On	Sensor Not Used

**Back-Feed Selection (DSW3-4):**

When Back-Feed is enabled, the printer will position the label for dispensing and retract it before printing the next label. The amount of backfeed is adjustable.

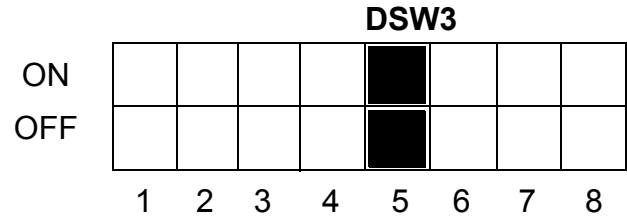
DSW3-4	SETTING
Off	Enabled
On	Disabled



### EXT Print Start Signal Selection (DSW3-5):

This selection allows an external device to initiate a label print for synchronization with the applicator. See Section 3: Interface Specifications for a description of the signal level and requirements. When DSW3-5 is On, the unit is in the Continuous print mode, Backfeed is disabled and External Signals are ignored.

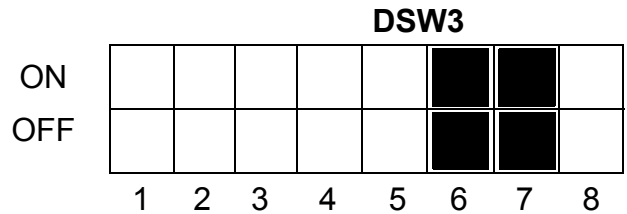
DSW3-5	SETTING
Off	Disabled
On	Enabled



### External Signal Type Selection (DSW3-6, DSW3-7):

This setting selects the both the polarity and signal type (level or pulse) of the external print synchronizing signal. See Section 3 for a definition of signal types.

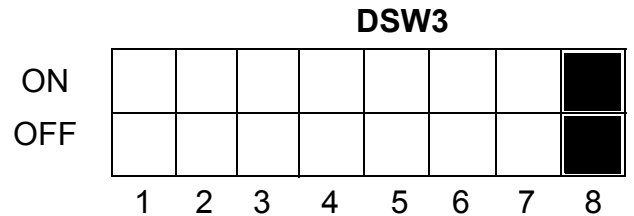
DSW3-6	DSW3-7	SETTING
Off	Off	Type 4
Off	On	Type 3
On	Off	Type 2
On	On	Type 1



### Repeat Print via External Signal (DSW3-8):

This setting allows an applicator or other device to reprint the last label of the print job. See Section 3: Interface Specifications for a description of the signal requirements.

DSW3-8	SETTING
Off	Disabled
On	Enabled



## 2.2 Default Settings

### Dip Switch Selections

All switches are placed in the Off position for shipping. This will result in the following operating configuration.

<b>Communications:</b>	8 data bits, no parity, 1 Stop bit, 9600 Baud
<b>Protocol:</b>	Ready/Busy
<b>Sensor:</b>	Gap Sensor
<b>Receive Buffer:</b>	Multi-Job
<b>Mode:</b>	Batch/ Continuous
<b>Label Sensor:</b>	Sensor Used
<b>Backfeed:</b>	Enabled
<b>External Signals:</b>	Enabled

### Software Default Settings

The printer stores any software settings upon receipt and uses them until they are again changed by receipt of a command containing a new setting. These settings are stored in non-volatile memory and are not affected by powering the printer off. The printer may be reset to use the default software settings by depressing the LINE and FEED keys simultaneously while powering on the printer. This will result in the following default configuration.

SETTING	M-10e
Print Darkness	3
Print Speed	5 in. per second
Print Reference	Vertical = 0000, Horizontal = 0000
Zero	Slash
Auto On-Line	Enabled
Feed on Error	Enabled
Feed Reprint	Enabled
Priority	Command

Once default operation is completed, a DEFAULT SETTING COMPLETED message will be displayed on the LCD panel. The printer should be powered off while this message is being displayed (or after the beep is heard). This saves the default settings in the non-volatile memory where they will be automatically loaded the next time the printer is powered on.

**DEFAULT SETTING  
COMPLETED**



## 2.3 LCD Panel Configuration

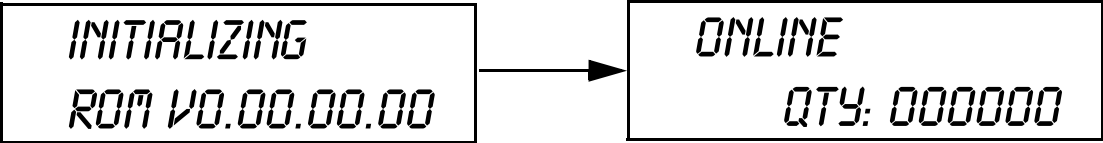
The LCD Panel is used in conjunction with the LINE and FEED switches to manually enter printer configuration settings. Many of the settings can also be controlled via software commands and in the case of conflict between software and control panel settings, the printer will always use the last valid setting. If you load a label job that includes software settings and then enter a new setting via the LCD Panel, the manually set values will be used by the printer. If you set the values manually and then download a job with software settings, the software settings will be used.

There are 10 modes of operation you can access from the LCD panel. To enter the desired mode, the KEY SEQUENCE combination listed in the table must be performed. The initial LCD display message is shown for each mode.

MODE	KEY SEQUENCE	INITIAL DISPLAY	PAGE
Normal	POWER	ONLINE QTY:000000	2-10
Conventional/ Interchangeable	DSW2-8 ON + POWER	ONLINE QTY:000000	
Advanced	LINE + POWER	ADVANCED MODE	2-13
Test Print	FEED + POWER	TEST PRINT MODE CONFIGURATION	2-34
Default Setting	LINE + FEED + POWER	DEFAULT SETTING YES NO	2-35
Maintenance	LINE + FEED + DSW2-4 ON + POWER	MAINTENANCE MODE DSW2-4 ON>OFF	2-36
Non Standard Clear	LINE + FEED + DSW2-7 ON + POWER	ALTPROTOCOL	2-38
Protocol Code Download	LINE + DSW2-7 ON + POWER	USERDOWNLOAD	2-39
Hex Dump	DSW2-4 ON + POWER	ONLINE QTY:000000	2-40
Firmware Download	DSW2-6 ON + POWER	FLASH DOWNLOAD READY	2-41

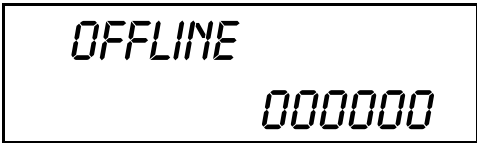
LCD Panel —Normal Mode

When the printer is first powered on, it displays the current ROM version of the printer, then immediately displays the ONLINE mode.



The LCD Panel will display the ONLINE status on the top line of the display. The bottom line will contain the label quantity (QTY) status. The message will be changed to OFFLINE whenever the printer is switched offline by depressing the LINE key. As soon as a print job is received, the QTY message will indicate the number of labels to be printed. As soon as the label job begins to print, the display will indicate the number of labels remaining in the print job that remain to be printed. The user can access the User Settings using the following procedures.




User Settings

STEP	PROCEDURE
1.	<div>The printer is first taken offline by pressing the <b>LINE</b> key once. The display will change to OFFLINE.</div> <div></div>
2.	<div>Press the <b>LINE</b> and <b>FEED</b> keys simultaneously for more than one second. The printer now displays the first USER mode adjustment, (Print Darkness).</div>

Print Darkness Setting

There are five **Darkness** (or heat range) settings on the printer. The higher numbers represent darker settings. The current setting is indicated by a line under one of the range settings.

To change the setting:

STEP	PROCEDURE
1.	<div>Use the   keys to step the underlined cursor to the desired setting.</div> <div><div><div>1 = Light</div><div>2 = Slightly Light</div><div>3 = Medium</div><div>4 = Slightly Dark</div><div>5 = Dark</div></div><div></div></div>
2.	<div>Once the correct setting is underlined, press the <b>ENTER</b> key to accept the setting and advance to the next adjustment.</div>




## LCD Panel —Normal Mode

### Print Speed Adjustment

There are three speed settings on the printer. 3 is the slowest speed while 5 is the fastest. Default setting is 4.



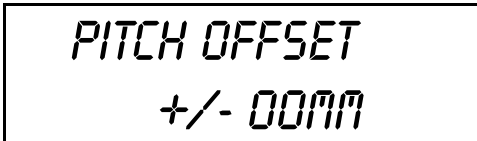
To change the setting:

Setting	Speed
3	? ips (xxxmm/s)
4	? ips (xxxmm/s)
5	5 ips (125mm/s)

STEP	PROCEDURE
1.	Use the   keys to step the underlined cursor to the desired setting.
	
2.	Once the correct setting is underlined, press the <b>ENTER</b> key to accept the setting and advance to the next adjustment.

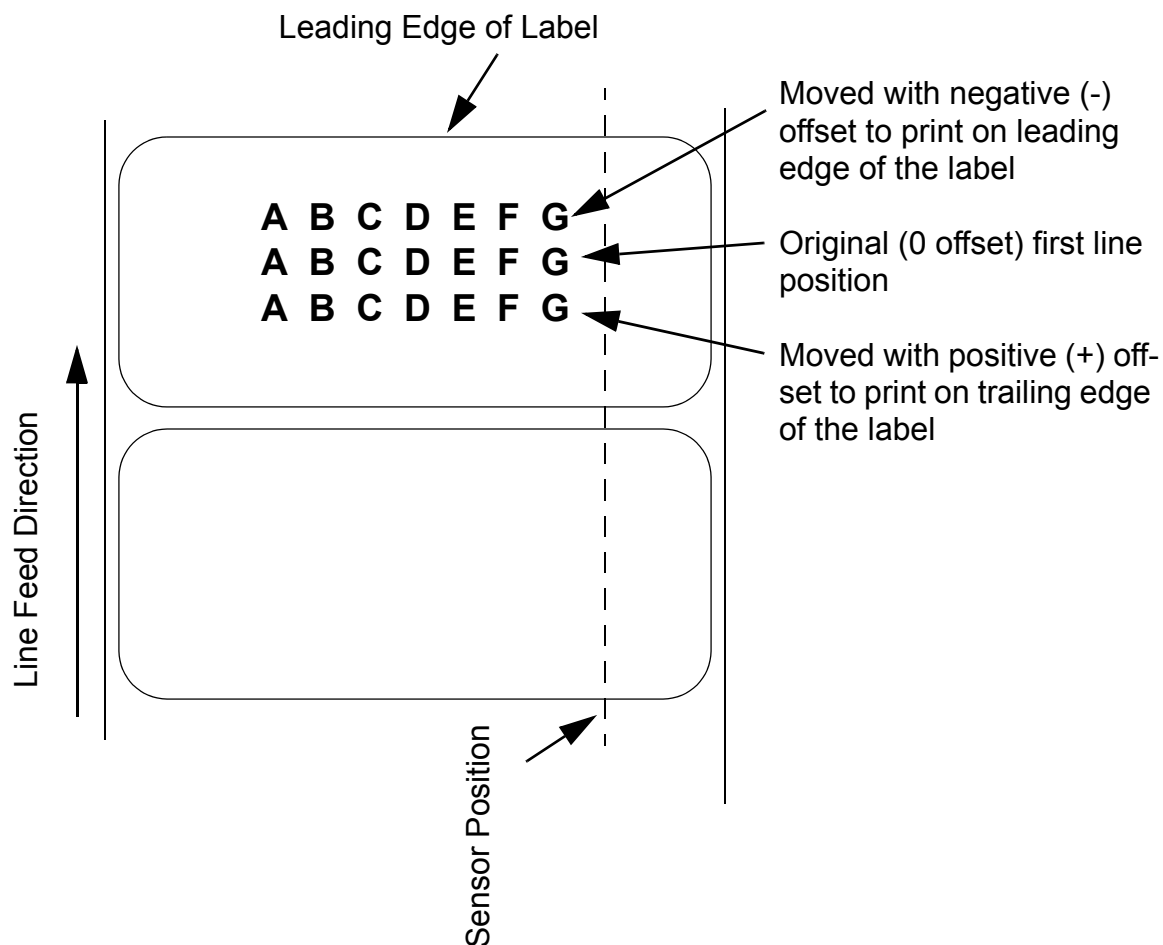
### Pitch Offset Adjustment

The label pitch is the distance from the leading edge (the edge that comes out of the printer first) of a label and the leading edge of the next label. The leading edge position of the label can be adjusted relative to the print head +/- 49 mm in increments of 1 mm. Once the position is set, it can be fine adjusted +/- 3.75 mm using the PITCH potentiometer on the adjustment panel. The default value is +0.

STEP	PROCEDURE
1.	The underline cursor will initially be positioned underneath the + Pitch Direction Setting. Press the <b>LINE</b> key to select the + / - pitch offset value.
2.	Use the   and the <b>LINE/FEED</b> keys to step the cursor to the first digit.  The display will advance one increment each time the <b>LINE</b> key is pressed to a maximum setting of 5. Once the desired setting is selected, press the <b>ENTER</b> key to accept the setting and advance to the second digit. Once again the display will advance one increment each time the <b>LINE</b> key is pressed.
3.	Once the desired setting is selected, press the <b>ENTER</b> to accept the setting and advance to the next display.
	

## LCD Panel —Normal Mode

STEP	PROCEDURE
4.	Print a test label after completing the adjustments to ensure it is correct.



## LCD Panel —Normal Mode

### Cancel Print Job

If the printer has a print job(s) loaded in memory, selecting YES will cause the job(s) to be cleared. The default selection is NO (Do not clear). Make sure you want to clear the print job before selecting YES as the job cannot be recovered and will have to be transmitted to the printer.

Perform the following steps:

CANCEL PRINT JOB  
YES NO

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> .
2.	Once the correct setting is selected, press the <b>ENTER</b> to confirm the setting, confirms YES (Clear) or NO (Do not clear).
3.	After the print job(s) have been cleared from memory, the printer will display a COMPLETED message for 3 seconds and then return to the initial ONLINE Normal Mode.
	<p>CANCEL PRINT JOB COMPLETED</p>
4.	If you wish to change any of the settings, you must enter the User mode again by taking the printer OFFLINE and simultaneously pressing the <b>FEED</b> and <b>LINE</b> keys.

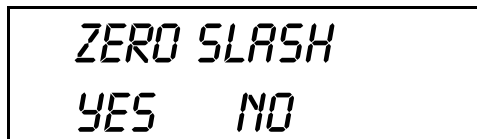
### Advanced Mode

Advanced Mode is provided to make adjustments that require only occasional adjustments. Since they affect the basic operation of the printer, the procedure for entering this mode is designed to prevent someone from accidentally changing the settings.



STEP	PROCEDURE
1.	Press the <b>LINE</b> key while simultaneously turning <b>ON</b> the power. When the printer emits one long beep, release the <b>LINE</b> key to display the first screen.
	<p>INITIALIZING ROM V00.00.00.00 → ADVANCED MODE</p>
2.	Press the <b>ENTER</b> key to display the Zero Slash screen.

## LCD Panel —Advanced Mode

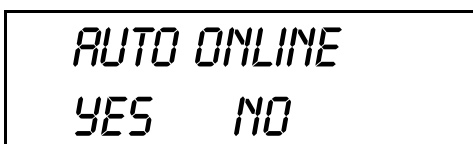
### Zero Slash





This setting determines if a zero is printed with a slash or without a slash. This setting can also be controlled via software commands. When YES is selected, the printer internal fonts will have a slash through the center of the zero character.

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> .
2.	Once the correct setting is selected, press <b>ENTER</b> to accept the setting and advance to the Auto Online display.

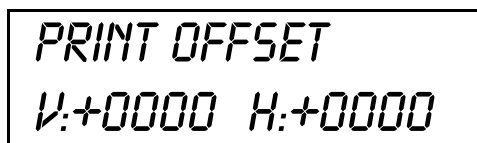
### Auto Online



This setting determines the mode in which the printer powers up. If YES is selected, the printer powers up in the ONLINE Mode and is ready to print. If NO is selected, the printer powers up in the OFFLINE Mode and must be manually placed in the ONLINE Mode by pressing the ENTER key before it is ready to print.

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> .
2.	Once the correct setting is selected, press <b>ENTER</b> to accept the setting and advance to the Print Offset display.

### Print Offset



Since the printer move the label in discrete steps equal to the size of the print dot, the units of measure for Vertical and Horizontal Offset distance is dots.

Vertical Offset is the distance down from the leading edge in dots (the edge of the label that comes out of the printer first) to the first vertical print position. A positive setting moves the label edge out of the printer while making it negative moves it back into the printer. The maximum value that can be set is 3600 dots.

## LCD Panel —Advanced Mode

### Print Offset (Continued)

Horizontal Offset is the distance that the label image is shifted either to the right or left on the label. For a positive setting the image is shifted to the left (towards the inside edge of the label). For a negative setting the image is shifted to the right (towards the outside edge of the label). This setting changes the base reference point for all subsequent label jobs. The effect is identical to the <ESC>A3 Base Reference point command. The maximum values that can be set for each is +/- 3199 dots.

STEP	PROCEDURE
1.	The underline cursor will initially be positioned underneath the + Pitch Direction Setting. Press the <b>LINE</b> key to select the vertical + / - pitch offset value.
2.	Press the <b>ENTER</b> key to advance to the first vertical digit. The display will change one increment each time the <b>LINE</b> or <b>FEED</b> key is pressed. Once the desired setting is selected, press the <b>ENTER</b> key to accept the setting and advance to the second digit. Once again the display will change one increment each time the <b>LINE</b> or <b>FEED</b> key is pressed. Continue advancing through the vertical digits. After the final vertical setting is set, press the <b>ENTER</b> key to move to the +/- horizontal pitch offset value. Press the <b>LINE</b> or <b>FEED</b> to select the horizontal pitch offset value, then repeat the above sequence to advance through the horizontal digits. After the final horizontal setting is set, press the <b>ENTER</b> key to accept the setting and advance to the next adjustment.

PITCH OFFSET  
+/- 00mm

The Set Calendar screen will display only if the Calendar Option is installed in the printer.



### Set Calendar

SET CALENDAR  
YES NO

The Calendar is an optional feature in M-10e printers allowing the date and time to be set manually using the LCD Display or via the <ESC>WT Calendar Set command. The last setting, set either manually via software command or received by the printer, will be the value used. The format of the display is YY/MM/DD hh:mm (Year/Month/Day/hours:minutes). The date format is fixed and cannot be changed.



## LCD Panel —Advanced Mode

### Set Calendar (Continued)

To enable the Calendar feature (if installed), use the   keys to step the cursor to either **YES** or **NO**. Press **ENTER** to confirm YES (Calendar setting: YES) or NO (Calendar setting NO).

**Calendar**  
00/00/00 00:00

CALENDAR  
00/00/00 00:00

STEP	PROCEDURE
1.	Pressing <b>LINE</b> and <b>FEED</b> keys simultaneously sets the date and time. Use the   keys to scroll through the settings and press <b>ENTER</b> to confirm each item and return to the next screen. You will be able to set the Year, Month, Day, Hour and Minute in sequence.
a.	Year - The first display shown will have the cursor over the two digit year selection. Scroll through the dates by pressing the LINE/FEED keys. The year number will increase by one each time the LINE key is pressed until it reaches its maximum legal value, (i.e., “99” for the year digits). Press the FEED key to decrease the year number.
b.	Month - After you have set the correct year, press the ENTER key to advance to the two digit Month position. Scroll through the numbers corresponding to the month by pressing the LINE key. The month number will increase by one each time the LINE key is pressed until it reaches a value of “12”. Press the FEED key to decrease the month number.
c.	Day - After you have set the correct month, press the ENTER key to advance the cursor to the two digit Day position. Scroll through the numbers corresponding to month date by pressing the LINE and FEED keys. The date number will increase by one, each time the LINE key is pressed until it reaches a value of “31”. Press the FEED key to decrease the day number.
d.	Hour - After you have set the correct date, press the ENTER key to advance the cursor to the two digit Hour position. Scroll through the numbers corresponding to the hour (using a 24 hour clock) by pressing the LINE and FEED keys. The hour number will increase by one each time the LINE key is pressed until it reaches a value of “24”. Press the FEED key to decrease the hour number.
e.	Minute - After you have set the correct hour, press the ENTER key to advance the cursor to the two digit Minute position. Scroll through the numbers corresponding to the minutes by pressing the LINE and FEED keys. The minute number will increase by one each time the LINE key is pressed until it reaches a value of “60”. Press the FEED key to decrease the minute number.



## LCD Panel —Advanced Mode



### Set Calendar (Continued)

STEP	PROCEDURE
2.	After you have set the last item press the <b>ENTER</b> key to advance to the Ignore CR/LF selection.

### Ignore CR/LF





This setting tells the printer to strip out all carriage return/line feed pairs (CR/LF) from the data stream, including graphics and 2D bar codes. It is used primarily to maintain compatibility with earlier models of SATO printers.

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> .
2.	Once the correct setting is selected, press <b>ENTER</b> to accept the setting and advance to the Character Pitch display.

### Character Pitch




This setting allows you to set the default character pitch to either proportional character spacing or fixed character spacing. The default setting is PROP (proportional pitch YES)

STEP	PROCEDURE
1.	Use the   keys to step the cursor to the desired setting.
2.	Once the desired setting is selected, press <b>ENTER</b> to accept the setting and return to the Advanced Mode display.  <b>To Exit the Advanced Mode, power the printer off, then back on.</b>

## LCD Panel — Card Mode

### Mem Select (CC1)



The Card Mode is entered from the Advanced Mode display. This selection allows the operator to manage the Expanded Memory (PCMCIA Card or Internal Expanded Flash ROM).

STEP	PROCEDURE
1.	<p>From the Advanced Mode press the <b>ENTER</b> key, then press the  key to switch to the Card Mode.</p> <p>The Card Mode display indicates that the printer is in the Card Mode. To advance to the Mem Select (CC1) press the <b>ENTER</b> key.</p> <div style="display: flex; align-items: center; justify-content: center; margin: 10px 0;"> <div style="border: 1px solid black; padding: 10px; text-align: center; width: 200px;">CARD MODE</div> <div style="margin: 0 10px;">→</div> <div style="border: 1px solid black; padding: 10px; text-align: center; width: 200px;">MEM SELECT (CC1) CARD MEMORY</div> </div> <p>This selection determines which type of optional expanded memory will be addressed as “CC1” in the command streams. The CARD selection specifies the optional PCMCIA card as CC1 and the optional Expanded Flash ROM as CC2. The MEMORY selection specifies the optional Expanded Flash ROM as CC1 and the optional PCMCIA card as CC2.</p>
2.	Step the cursor to the desired selection (CARD or MEMORY) using the cursor keys.
3.	Once the cursor is positioned over the desired selection, press the <b>ENTER</b> key to accept the selection and advance to the next screen.

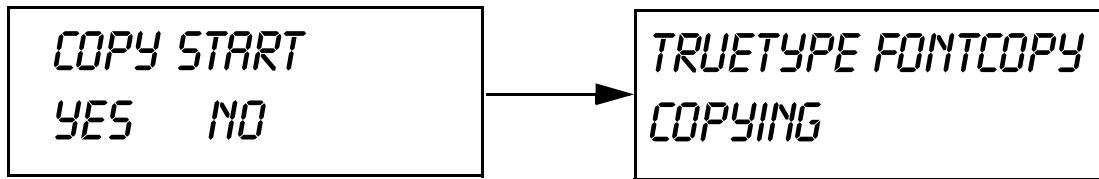
### Card -> MemoryCopy TrueTypeFont Y/N

CARD -> MEMORYCOPY  
 TRUETYPEFONT Y/N

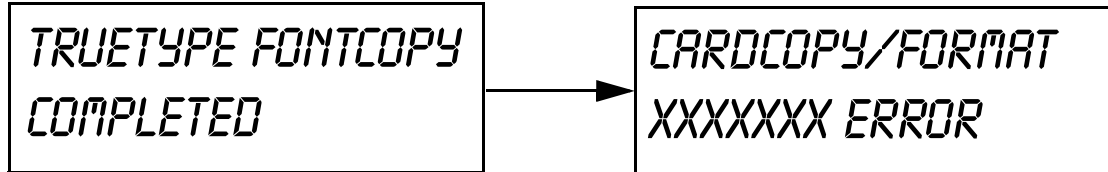
This selection allows you to copy True Type fonts from the PCMCIA Memory card installed in the Memory Card slot on the rear of the printer to the Option Flash ROM.

STEP	PROCEDURE
1.	<p>Use the   keys to step the cursor to either <b>YES</b> copy or <b>NO</b>.</p> <p>If Yes is selected, the printer will enter the Card Copy mode. If No is selected, the display will advance to the Card to Memory SATO Font Copy mode.</p>
2.	Confirm your selection by stepping the cursor to the Yes selection. If No was selected, the display will return to the previous selection.
3.	Press the <b>ENTER</b> key to accept the setting. If Yes was selected, the Copy process will start.

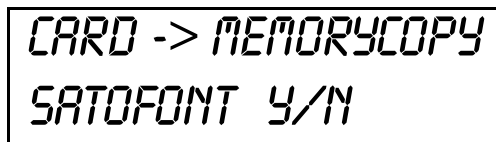
## LCD Panel — Card Mode





STEP	PROCEDURE
4.	Once the copy process is completed, press the <b>ENTER</b> key to step the display.
5.	If an error is encountered in the copy process, one of the following messages will be displayed on the second line. <div> <div>R/W</div> <div>Indicates a Read/Write error occurred.</div> </div> <div> <div>No Card Error</div> <div>Indicates no card was recognized</div> </div> <div> <div>Mem Full Error</div> <div>Indicates that there is insufficient memory available.</div> </div>

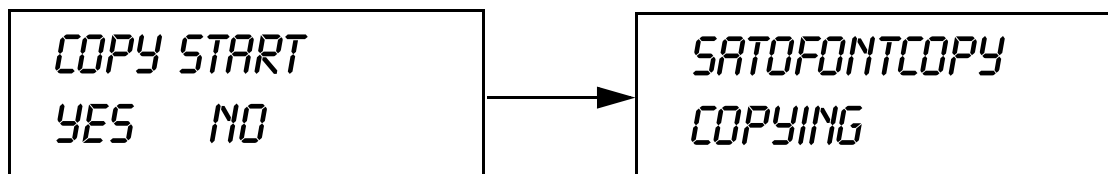


**Card -> MemoryCopy**  
**SATOFONT Y/N**



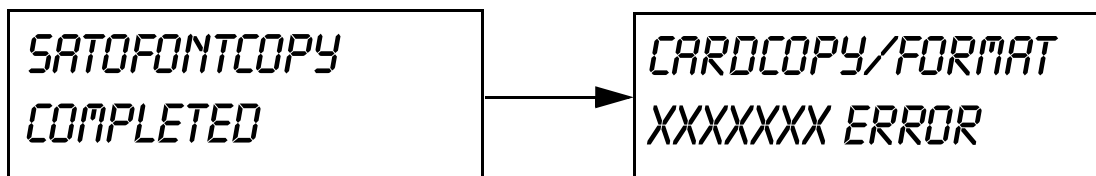
This selection allows you to copy SATO fonts from the PCMCIA Memory card installed in the Memory Card slot on the rear of the printer to the optional Flash ROM.

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> copy or <b>NO</b> . If Yes is selected, the printer will enter the Card Copy mode. If No is selected, the display will advance to the Card to Memory Copy All mode.
2.	Confirm your selection by stepping the cursor to the Yes selection. If you selected No, the display will return to the previous selection.
3.	Press the <b>ENTER</b> key to accept the selection. If Yes was selected, the copy process will start.



## LCD Panel — Card Mode



STEP	PROCEDURE
4.	Once the copy process is completed, press the <b>ENTER</b> key to step the display.
5.	If an error is encountered in the copy process, one of the following messages will be displayed on the second line.  R/W                      Indicates a Read/Write error occurred.  No Card Error       Indicates no card was recognized  Mem Full Error       Indicates that there is insufficient memory available.

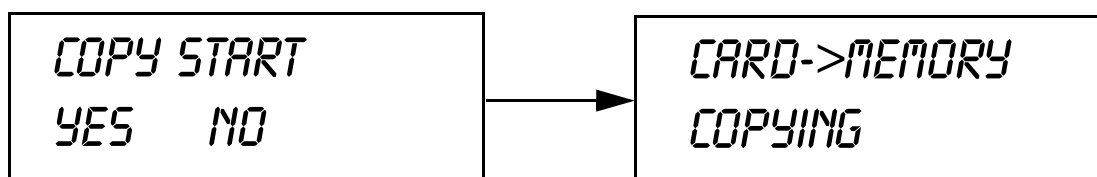


**Card -> Memory Copy**  
**All <XMB> Y/N**

*CARD -> CARD COPY*  
*ALL <XMB> Y/N*

This selection allows you to copy the entire contents from the PCMCIA Memory card installed in the Memory Card slot on the rear of the printer to the optional internal Expanded Memory.

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> copy or <b>NO</b> .  If Yes is selected, the printer will enter the Card Copy mode. If No is selected, the display will advance to the Card to Memory Copy All mode.
2.	Confirm your selection by stepping the cursor to the Yes selection. If you selected No, the display will return to the previous selection.
3.	Press the <b>ENTER</b> key to accept the selection. If Yes was selected, the copy process will start.



## LCD Panel — Card Mode

STEP	PROCEDURE
4.	Once the copy process is completed, press the <b>ENTER</b> key to step the display.
5.	If an error is encountered in the copy process, one of the following messages will be displayed on the second line. <ul style="list-style-type: none"> <li>R/W Indicates a Read/Write error occurred.</li> <li>No Card Error Indicates no card was recognized</li> <li>Mem Full Error Indicates that there is insufficient memory available.</li> </ul>



CARD->MEMORYCOPY  
COMPLETED

CARDCOPY/FORMAT  
XXXXXXX ERROR

**Card -> Card Copy**  
**All <XMB> Y/N**

CARD -> CARDCOPY  
ALL <XMB> Y/N

This selection allows you to copy the entire contents of the optional Expanded Memory to the PCMCIA Memory card installed in the Memory Card slot on the rear of the printer.

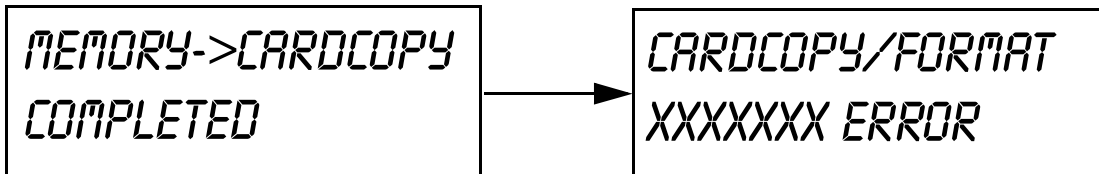
STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> copy or <b>NO</b> . If Yes is selected, the printer will enter the Card Copy mode. If No is selected, the display will advance to the Card to Memory Copy All mode.
2.	Confirm your selection by stepping the cursor to the Yes selection. If you selected No, the display will return to the previous selection.
3.	Press the <b>ENTER</b> key to accept the selection. If Yes was selected, the copy process will start.

COPY START  
YES NO

MEMORY->CARDCOPY  
COPYING

## LCD Panel — Card Mode



STEP	PROCEDURE
4.	Once the copy process is completed, press the <b>ENTER</b> key to step the display.
5.	If an error is encountered in the copy process, one of the following messages will be displayed on the second line.  R/W                      Indicates a Read/Write error occurred. No Card Error       Indicates no card was recognized Mem Full Error       Indicates that there is insufficient memory available.

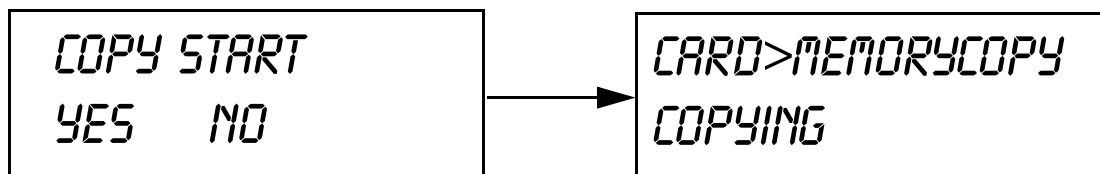


**Card -> Memory Copy  
Program Y/N**

**CARD -> MEMORYCOPY  
PROGRAM Y/N**

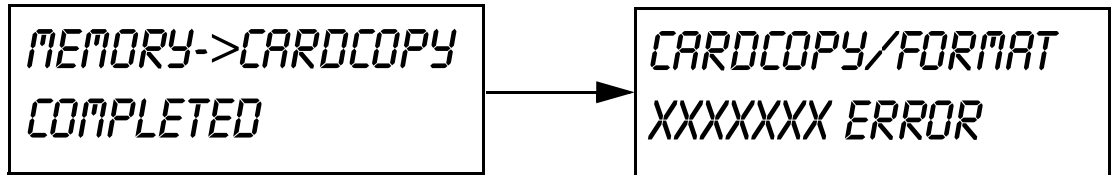
This selection allows you to copy printer firmware from the PCMCIA Memory Card to the printer.

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> copy or <b>NO</b> .  If Yes is selected, the printer will enter the Card Copy mode. If No is selected, the display will advance to the mode display.
2.	Confirm your selection by stepping the cursor to the Yes selection. If you selected No, the display will return to the previous selection.
3.	Press the <b>ENTER</b> key to accept the selection. If Yes was selected, the copy process will start.



## LCD Panel — Card Mode

STEP	PROCEDURE
4.	Once the copy process is completed, press the <b>ENTER</b> key to step the display.
5.	If an error is encountered in the copy process, one of the following messages will be displayed on the second line. <ul style="list-style-type: none"> <li>R/W Indicates a Read/Write error occurred.</li> <li>No Card Error Indicates no card was recognized</li> <li>Mem Full Error Indicates that there is insufficient memory available.</li> </ul>





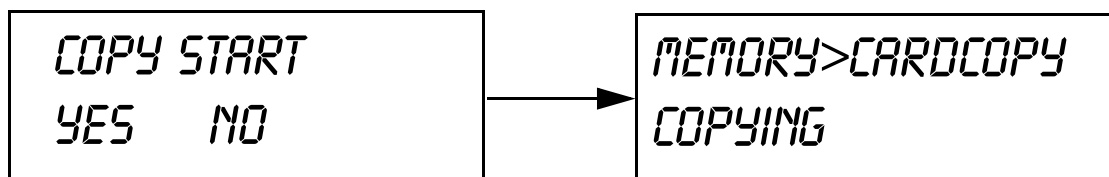
Memory -> Card Copy  
Program Y/N

```

MEMORY-> CARDCOPY
PROGRAM   Y/N
  
```

This selection allows you to copy the current firmware installed in the printer to a PCMCIA Memory Card.

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> . If Yes is selected, the printer will enter the Card Copy mode. If No is selected, the display will advance to the mode display.
2.	Confirm your selection by stepping the cursor to the Yes selection. If you selected No, the display will return to the previous selection.
3.	Press the <b>ENTER</b> key to accept the selection. If Yes was selected, the copy process will start.



## LCD Panel — Card Mode

STEP	PROCEDURE
4.	Once the copy process is completed, press the <b>ENTER</b> key to step the display.
5.	If an error is encountered in the copy process, one of the following messages will be displayed on the second line.  R/W                      Indicates a Read/Write error occurred. No Card Error       Indicates no card was recognized Mem Full Error       Indicates that there is insufficient memory available.



MEMORY->CARDCOPY  
COMPLETED

CARDCOPY/FORMAT  
XXXXXXX ERROR

### Card Format Yes No

CARD FORMAT  
YES NO



Before a PCMCIA card can be used, it must be formatted. Formatting a card destroys all data currently used on the card. The initial value is **NO** (do not format).

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> .
2.	If Yes is selected, the printer will enter the Card Format mode. If No is selected, the display will advance to the mode display.

### Memory Format Yes No

MEMORY FORMAT  
YES NO

Before the internal expanded memory can be used, it must be formatted. Formatting the memory destroys all stored data. The initial value is **NO** (do not format).


STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> .
2.	If Yes is selected, the printer will enter the Memory Format mode. If No is selected, the display will advance to the mode display.
<b>To exit the Card Mode, power the printer off, then back on.</b>	



## LCD Panel — Service Mode

The Service Mode allows the operator to set up basic operation parameters of the printer. The Service Mode is entered from the Advanced Mode/Card Mode.



STEP	PROCEDURE
1.	From the Advanced Mode press the  key once to switch to the Service Mode.
2.	Press the <b>ENTER</b> key to advance to the first selection.

**Gap** [X.XV]  
**Input** [X.XV]

The M10e printers determine the location of the leading edge of the label by measuring the difference between light levels when it sees either a label edge or a black “EYE” mark. This adjustment allows you to manually set the threshold voltage level, between the maximum and minimum light levels. DIP switch DSW2-2 selects the sensor type. If DSW2-2 is in the OFF position, the setting will be for a See-Thru (or Gap) sensor and the LCD will display “GAP” on the top line along with the current setting. If DSW2-2 is in the ON position, the LCD will display “EYE” on the top line with its current setting. If the value entered for the bottom line setting is “0.0V”, then the printer will automatically calculate the setting when the first label is fed after the printer is powered on or the head is closed. There are some instances where the automatically calculated value must be adjusted to ensure reliable label feeding, such as when the backing opacity or the reflectance of the EYE mark varies significantly within a roll of labels or between label rolls. In these instances the value should be set using the following procedures.

**GAP** - When setting the “GAP” threshold, the voltage shown on the top line of the display must be measured with nothing but the backing in the sensor and then again with a label still attached to the backing. The formula to be used for setting the threshold is:  
 (High Voltage Level + Low Voltage Level) x 0.5 = Start Value

STEP	PROCEDURE
1.	Insert a label still attached to the backing into the sensor and close the Label Hold-Down. Record the voltage shown on the top line of the LCD panel. This line should have the message “GAP” on the top line (DIP switch DSW2-2 = OFF). Make sure the label is all the way under the sensor.

## LCD Panel — Service Mode

Gap [X.XV]

Input [X.XV]

STEP	PROCEDURE
2.	<p>Strip the label from the backing and insert the backing strip under the sensor and close the Label Lid. Record the voltage shown on the top line of the LCD panel. The voltage ranges measured should be within the following range.</p> <p style="padding-left: 40px;">Backing without label = 1.0V or less Backing with label = 2.0V to 3.5V</p> <p>If the measured values are outside this range, you may have trouble finding a value that will work properly under all conditions. If this is the case, a higher quality label may be needed to get adequate performance.</p>
3.	Calculate the starting point voltage using the formula.
4.	<p>Use the <b>LINE /FEED</b> keys to step the counter to the desired setting. The reading will advance to a setting of 4.9 (the maximum voltage). If a value of “0.0” is set, the printer will automatically set the level each time the printer is powered on with labels loaded or the head is closed.</p>
5.	Once the setting is correct, pressing the <b>ENTER</b> key will accept the setting and advance to the next display.

Eye [X.XV]

Input [X.XV]

**EYE** - When setting the “EYE” threshold, the voltage must be measured with nothing but the label under the sensor and then again with the printed “EYE” mark under the sensor.

The formula to be used for this is:

$$(\text{High Voltage Level} + \text{Low Voltage Level}) \times 0.5 = \text{Start Value}$$

STEP	PROCEDURE
1.	<p>Insert a label into the sensor and close the Label Hold-Down. Make sure the printed “EYE” mark is not under the sensor. Record the voltage shown on the top line of the LCD panel. This line should have the message “EYE” on the top line (DIP switch DSW2-2 = ON).</p>

## LCD Panel — Service Mode

Eye [X.XV]



Input [X.XV]

STEP	PROCEDURE
2.	<p>Now pull the label forward until the “EYE” mark is positioned under the sensor (the voltage reading should be at its highest point). Record the voltage shown on the top line of the LCD panel. The voltage ranges measured should be within the following ranges:</p> <p style="text-align: center;">Label only = Less than 1.0V Eye-mark = 2.5V to 3.5V</p> <p>If the measured values are outside this range, you may have trouble finding a value that will work properly under all conditions. If this is the case, a higher quality label may be needed to get adequate performance.</p>
3.	Calculate the starting point voltage using the formula.
4.	Use the <b>LINE/FEED</b> keys to step the counter to the desired setting. The reading will advance to a setting of 4.9 (the maximum voltage). If a value of “0.0” is set, the printer will automatically set the level each time the printer is powered on with labels loaded or the head is closed.
5.	Once the setting is correct, press the <b>ENTER</b> key to accept the setting and advance to the next display.

**Auto Online Feed**  
Yes No

**AUTO ONLINE FEED**  
**YES NO**

This selection specifies whether or not the printer will automatically feed a blank label when it is placed in the Online mode



STEP	PROCEDURE
1.	<p>Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b>.</p> <p>If Yes is selected, the printer will feed a blank label anytime it enters the Online mode.</p>
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.

## LCD Panel — Service Mode

**Feed on Error**  
Yes No

FEED ON ERROR  
YES NO



This selection specifies whether or not the printer will feed a blank label automatically when an error condition is cleared..

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> .  If Yes is selected, the printer will feed a blank label anytime an error condition is cleared.
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next display.

**Reprint W/Feed**  
Yes No

REPRINT W/FEED  
YES NO

This selection specifies whether or not the printer will print the last printed label stored in memory when the FEED key is pressed in the Normal Online mode.

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either <b>YES</b> or <b>NO</b> .  If Yes is selected, the printer will reprint the last label when the FEED key is pressed when the printer is Online. If the printer is Offline, pressing a FEED key will feed a blank label.
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next display.



**Forward/Backward**  
**Distance Default**

FORWARD/BACKWARD  
DISTANCE DEFAULT


This display will only appear if Backfeed is enabled (DSW3-4 = OFF). The maximum backfeed distance is 255 mm.

## LCD Panel — Service Mode



### Forward/Backward Distance Default (Continued)

STEP	PROCEDURE
1.	Use the   keys to step the cursor to either the default or the Manual selection.
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next display.
3.	If the Manual setting is selected, use the cursor keys to advance the distance to the desired setting. Each time the LINE key is pressed, the Distance will advance 1 mm. The maximum distance is 255mm.
4.	Once the desired distance is set, press the ENTER key to accept the setting and step to the next display.


### Ext Port Pin 9 Select



This selection allows user to select the conditions that cause the signal on Pin 9 of the EXT connector to be true. If Mode 1 is selected, Pin 9 will be true when the printer is ready to print, i.e., it is Online and has a print job loaded (a quantity of labels to be printed on the display). If Mode 2 is selected, Pin 9 will be true if the printer is Online.

STEP	PROCEDURE
1.	Use the   keys to select Mode 1 or Mode 2.
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.

### Euro Code D5





This selection allows the user to specify the hexadecimal code for the character which is replaced with the Euro Character. The default is D5 Hex.

## LCD Panel — Service Mode

Euro Code

D5



(Continued)

STEP	PROCEDURE
1.	The cursor should be positioned over the first digit selection. Use the   keys to step to the desired setting.
2.	Press the <b>ENTER</b> key to advance the cursor to the second digit of the desired hexadecimal code.
3.	Press the <b>LINE</b> key to step to the desired setting.
4.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.

Select LCD Display  
Language

SELECT LANGUAGE  
ENGLISH



This selection allows user to select the language used in the LCD menu and error messages. The selections are English, French, German, Spanish, Italian and Portuguese.

STEP	PROCEDURE
1.	Use the   keys to select displayed language.
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the displayed language and advance to the next screen.

Ignore Can/DLE  
Yes No

IGNORE CAN/DLE  
YES NO

If the printer is placed in the Multi-Item Buffer Mode (DSW2-5 = OFF), the user can choose to ignore CAN (18H) and DLE (10H) commands used in bi-directional communications. If the Single Item Buffer Mode is chosen (DSW2-5 = ON), this display will be skipped.



STEP	PROCEDURE
1.	Use the   keys to select <b>YES</b> (Valid) or <b>NO</b> (Invalid).
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.

## LCD Panel — Service Mode

### Priority Setting LCD Command

PRIORITY SETTING  
COMMAND LCD



This selection allows user to switch to assign a priority for Print Darkness, Print Speed and Print Offset. Default value is COMMAND (Command Valid). If LCD is selected, the setting established via the LCD display/menu system will be used for an incoming label job, regardless of any different command settings. If Command is selected, any commands in the label job will take precedence and be used for printing the job and the LCD display will reflect the new setting.

STEP	PROCEDURE
1.	Use the   keys to select COMMAND (Command Valid) or LCD (Command Invalid).
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.

### Label Re-Detect Enable Disable

LABEL RE-DETECT  
ENABLE DISABLE

This selection allows user to switch to disable the feeding of a blank label upon power up. If Enable is selected, the printer will automatically feed a label until it detects a label edge. This will correctly position the next printed label under the print head. If Disable is selected, the printer will not try to detect the next label and the operator is responsible for ensuring that the label is correctly positioned before printing.

STEP	PROCEDURE
1.	Use the   keys to select the desired setting.
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.



### IEEE1284 ACKSIGNAL 005

IEEE1284  
ACKSIGNAL 005

If the printer is placed in the Single Item Buffer Mode (DSW2-5 = ON), this selection allows the user to set the width of the IEEE1284 ACK pulse. In the Multi-Item Buffer Mode, this display will be skipped. The range is 0.5  $\mu$ sec to 10  $\mu$ sec.

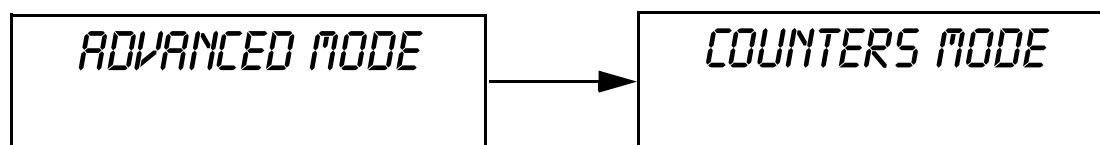
## LCD Panel — Service Mode


IEEE1284  
ACKSIGNAL 005  
(Continued)

STEP	PROCEDURE
1.	Use the   keys to step the display to the desired setting. The setting will advance in increments of 0.1 $\mu$ sec each time the LINE key is pressed until the setting reaches 10.0 $\mu$ sec when it will wrap around to the 0.5 $\mu$ sec setting.
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.  <b>To exit the Service Mode, power the printer off, then back on.</b>

## LCD Panel — Counters Mode

The Counters Mode is provided to allow the user to access the internal printer counters and is entered from the Advanced Mode.



STEP	PROCEDURE
1.	From the Advanced Mode press the ENTER key, then press the  key to switch to the Counters Mode.

**Counters**  
**HD CUT LIFE**



The counters are identified in the display as:

HD: Head Counter (should be reset when the print head is replaced)

CUT: Cutter Counter

LIFE: Life Counter (cannot be reset)





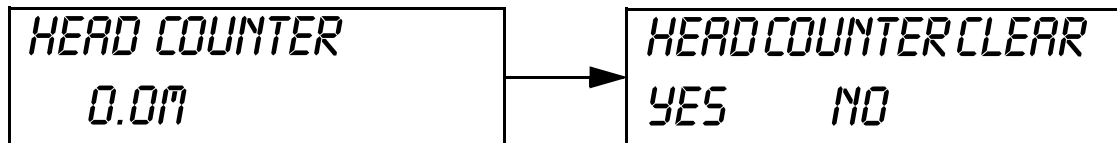
## LCD Panel — Counters Mode

### Counters

#### HD CUT LIFE

(Continued)

STEP	PROCEDURE
1.	Use the   keys to the desired counter. The default position is the Head Counter.
2.	Once the correct setting is selected, pressing <b>ENTER</b> will display the current value (in meters) stored in the counter. The maximum number of digits displayed is 8.
3.	Press the ENTER key again to advance the counter to the Clear mode. All counters with the exception of the LIFE counter will be cleared.
4.	Use the cursor keys to select the desired setting. If you only want to read the counter value, select NO. If you want to read the counter and reset it to 0.0, place the cursor over YES. Once the desired setting is selected, press the ENTER key to advance to the next screen.



### Cut Counter

0

Displays Cutter Counter





STEP	PROCEDURE
1.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.

### Cut Counter Clear Yes No



Selects Cutter Counter Clear. Default is NO (Do not Clear).

STEP	PROCEDURE
1.	Use the   keys to select <b>YES</b> (Clear) or <b>NO</b> (Do not Clear).
2.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.

## LCD Panel — CountersMode

**Counters**  
**HD CUT LIFE**  
 (Continued)

**Life Counter**  
**0.0M**



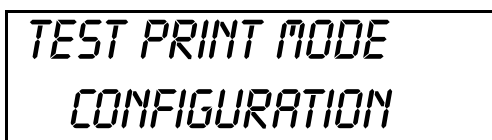
Displays Life Counter



STEP	PROCEDURE
1.	Once the correct setting is selected, press <b>ENTER</b> to confirm the setting and advance to the next screen.  To Exit the Counters Mode, power off the printer, then back on.

## LCD Panel — Test Print Mode

The Test Print Mode offers four different printer status labels for troubleshooting. If DSW3-5 is in the OFF position, the Test Print cycle must be initiated with a Print Start signal on the EXT connector. Enter the Test Print Mode by pressing the FEED key while powering on the printer.

**Test Print Mode**  
**Configuration**



STEP	PROCEDURE
1.	Power on the printer while pressing the FEED key. Release the FEED key after the beep sound and the printer will display the Test Print Mode message on the LCD panel.
2.	Use the   keys to select the type of test label you wish to print. The choices are: CONFIGURATION (setting content), BARCODE (bar code), HEAD CHECK (head check), MEMORY (Expanded memory) and FACTORY (factory test print).
3.	Once you have selected the type of test label to be printed, press the <b>ENTER</b> key to accept the selection and advance to the the Test Print Size display. This display allows you to select the label width.

## LCD Panel — Test Print Mode

**Test Print Size**  
**10 CM**

**TEST PRINT SIZE**  
**10 CM**

NOTE: This display does not appear when a Memory Test Print is chosen. Only a small Memory Print can be printed.

This selection sets the paper size for a test print. (Not displayed when MEMORY is selected.) Default value is the maximum horizontal size (cm).

STEP	PROCEDURE
1.	Press the <b>LINE</b> and <b>FEED</b> keys simultaneously. This selects the test print size (13~ Maximum horizontal size).
2.	Press <b>ENTER</b> to confirm the test print size. After selecting test print paper size, test print will start. During printing, when the <b>ENTER</b> key is pressed, the test printing will be suspended. Press the <b>ENTER</b> key again to restart test printing. Pressing the <b>ENTER</b> key again suspends/restarts test printing.

**PRESS ENTER KEY TO**  
**STOP PRINTING**



To exit the Test Print Mode, power off the printer, then back on.

## LCD Panel — Default Setting Mode

Occasionally it is desirable to reset all printer configuration settings to their original default conditions. This allows the operator to start the reconfiguration of the printer starting from a known set of conditions.

**Default Setting Mode**

**DEFAULT SETTING**  
**YES NO**

STEP	PROCEDURE
1.	Power on the printer while pressing the <b>LINE</b> and <b>FEED</b> keys simultaneously. When the printer emits one long beep release the keys.
2.	Use the   keys to select either YES (Default) or NO (Do not Default).
3.	Press the <b>ENTER</b> key to confirm your selection.



## LCD Panel — Default Setting Mode

### Default Setting Mode (Continued)

STEP	PROCEDURE
4.	<p>When the printer has completed the reset process, the Default Setting Completed display will appear. The printer is now in the default configuration.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p><i>DEFAULT SETTING COMPLETED</i></p> </div> <p>To exit the Default Setting Mode, power the printer off, then back on.</p>



## LCD Panel — Maintenance Mode — Factory Mode

This function is used to clear counters and reset the printer's firmware and is used after upgrading the flash firmware or installing a new memory module.

STEP	PROCEDURE
1.	Record all current dip switch positions, then place all switches in the OFF position.
2.	Place <b>DSW2-4</b> in the ON or up position.
3.	<p>Press the <b>LINE</b> and <b>FEED</b> keys simultaneously while turning on the power. Release the keys when the printer beeps. The following screen will appear</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p><i>MAINTENANCE MODE DIPSW2-4 ON&gt;OFF</i></p> </div>
4.	<p>Place the <b>DSW2-4</b> in the <b>OFF</b> position and the following screen will appear.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p><i>FACTORY MODE</i></p> </div>
5.	<p>Press the <b>ENTER</b> key to enter the Clear Mode.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p><i>COUNTER CLEAR NONE</i></p> </div>
6.	<p>Use the   keys to select NONE (Do not Clear), ALL (Clear All) HEAD (Clear head counter only) or CUT (Clear cutter counter only)</p>



## LCD Panel — Maintenance Mode — Factory Mode

### Maintenance Mode — Factory Mode (Cont)

STEP	PROCEDURE
7.	<p>Press the <b>ENTER</b> key to confirm your selection and advance to setting of test print paper size.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>PRINT SIZE</b>  <b>SMALL LARGE</b> </div>
8.	<p>Use the   keys to select either SMALL (128mm) or LARGE (266mm). The initial value is LARGE.</p>
9.	<p>Press the <b>ENTER</b> key to confirm your selection. The test print will start. When <b>ENTER</b> is pressed during printing, the test print will be suspended. Press <b>ENTER</b> key again to restart the test print.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>PRESS ENTER KEY</b>  <b>TO STOP PRINTING</b> </div>



### All Clear Mode

This selection is used to clear counters and reset the firmware and doesn't produce a test label.

STEP	PROCEDURE
1.	<p>From the Factory Mode screen press the <b>ENTER</b> key to switch to all clear mode screen.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>ALL CLEAR MODE</b> </div>
2.	<p>Press the <b>ENTER</b> key to enter the ALL CLEAR COUNTER EEPROM Mode.</p>
3.	<p>Use the   keys to select either COUNTER (Counter All Clear) or EEPROM (EEPROM All Clear).</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>ALL CLEAR</b>  <b>COUNTER EEPROM</b> </div> <p>When the COUNTER is selected, clear value becomes zero. When the EEPROM is selected, the clear value becomes the default.</p>

## LCD Panel — Maintenance Mode

### All Clear Mode (Continued)

STEP	PROCEDURE
4.	Press the <b>ENTER</b> key to confirm your selection. The current value is displayed on the screen, "COUNTER" or "EEPROM". <div style="border: 1px solid black; padding: 5px; text-align: center;"> XXXXXXXXALL CLEAR  YES NO </div>
5.	Use the   keys to select either YES (Clear) or NO (Do not Clear).
6.	Press the <b>ENTER</b> key to confirm your selection. The next screen will appear. <div style="border: 1px solid black; padding: 5px; text-align: center;"> XXXXXXXXALL CLEAR  COMPLETED </div>

## LCD Panel — Clear Non-Standard Protocol

The standard protocol codes used by the printer can be modified to accommodate the requirements of different host systems. However, if the printer is to be used with a system that does not use the custom protocol codes, they can be cleared and the default protocol codes used. The values are:

STX = 7B<sub>H</sub>, ETX = 7D<sub>H</sub>, ESC = 5E<sub>H</sub>, ENQ = 40<sub>H</sub>, NULL = 7E<sub>H</sub>,  
CAN = 21<sub>H</sub>, and OFFLINE = 5D<sub>H</sub>

STEP	PROCEDURE
1.	Place <b>DSW2-7</b> in the <b>ON</b> position. Press the <b>LINE</b> and <b>FEED</b> keys simultaneously and power on the printer. The printer will replace the Alternate Protocol codes with the default values and the following screen will appear. <div style="border: 1px solid black; padding: 5px; text-align: center;"> ALTPROTOCOL  DEFAULT COMPLETE </div>
2.	After the default setting is complete, the printer will emit three short beeps indicating that the process is complete.

## Download User Defined Protocol Codes

The user can define a set of custom protocol codes and download them to the printer using the <ESC>LD command.

STEP	PROCEDURE
1.	<p>Place <b>DSW2-7</b> in the <b>ON</b> position and power on the printer. Press the <b>LINE</b> key and wait for the code.</p> <div style="border: 1px solid black; padding: 10px; text-align: center; margin: 10px 0;"> <b>USER DOWNLOAD</b> </div>
2.	Transmit the download data command stream to the printer.
3.	After the data has been received, the printer will beep and print a status label. If it does not beep and print a status label, the printer did not accept the data. Turn off the printer and check your data stream for errors and start the download process over.
4.	<p>If the custom codes are correct, press the <b>FEED</b> key to accept them and terminate the download process. If they are incorrect, turn off the printer without pressing the <b>FEED</b> key and begin the process again.</p> <p>To exit the mode, power off the printer, then back on.</p> <p><b>Refer to the Operator and Technical Reference Manual for the data stream command structure required.</b></p>

## LCD Panel — Hex Dump Mode

In addition to the User Test Print Labels, the printer can print the contents of the receive buffer in a hexadecimal format to allow the data stream to be examined for errors and troubleshooting.

STEP	PROCEDURE
1.	To enter the Hex Dump mode, place <b>DSW2-4</b> in the <b>ON</b> position and power on the printer.
2.	Send the data stream to the printer.
3.	The receive data will be printed in a hexadecimal format.
4.	To return the printer to normal position, place DSW2-4 in the OFF position and power off the printer, then back on.

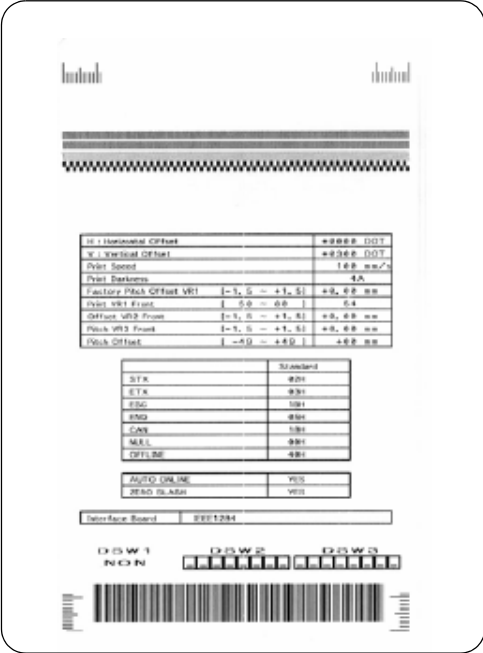




## LCD Panel — Download Mode

STEP	PROCEDURE
1.	Record all current dip switch positions, then place all switches in the <b>OFF</b> or down position.
2.	Place the <b>DSW2-6</b> in the <b>ON</b> or up position.
3.	Turn <b>ON</b> the power switch. The following screens will appear.
	<div>Waiting for downloading of program/font data from the computer.</div> <div>FLASH DOWNLOAD READY</div>
	<div>Display current download mode in X.</div> <div>XXXXXXXX DOWNLOAD DOWNLOADING</div>
	<div>Download completed.</div> <div>XXXXXXXX DOWNLOAD COMPLETED</div>
	<div>Display the error content in XXXX</div> <div>DOWNLOAD ERROR XXXXXXXX ERROR</div>
	Press the <b>ENTER</b> key to return to the original selection screen.

2.4 Sample Test Labels



CONFIGURATION



FACTORY

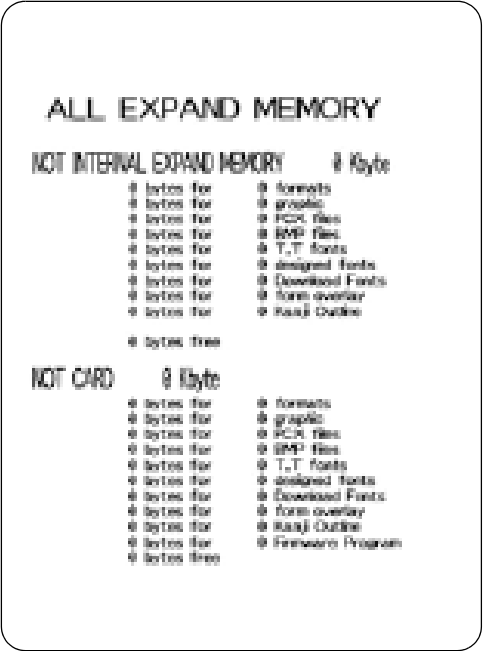


BAR CODE

ILLUSTRATIONS SHOWN ARE  
EXAMPLES ONLY AND MAY  
NOT EXACTLY MATCH YOUR  
OUTPUT



HEAD CHECK



MEMORY

## ***Interface Specifications***

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### ***3.1 Overview***

This section presents the interface specifications for the M-10e printer. These specifications include detailed information on how to properly interface your printer with your host system.

The printer utilizes a Plug-In Interface Module for maximum printer configuration.

The following information is presented in this section:

- *Interface Types*
- *The Receive Buffer*
- *IEEE1284 Parallel Interface*
- *RS232C Serial Interface*
- *BI-Directional Communications Protocol*
- *Universal Serial BUS (USB) Interface*
- *Local Area Network (LAN) Interface*
- *Ext Connector*

### ***3.2 Interface Types***

The Parallel interface for the M-10e printer is a high speed, bi-directional parallel interface that conforms to the IEEE1284 specification. (ECP mode on some computers). The interface is also compatible with the older Centronics parallel interface standard. If it does not detect the correct IEEE1284 signals in the interface connection, it will automatically operate in the standard Centronics mode which is much slower. To use the IEEE1284 parallel interface to its fullest capability requires that the host also have an IEEE1284 compatible interface and that the two be connected with a cable that meets the IEEE1284 specification. If either of these two are not present, the data rate is severely compromised.

In order to provide flexibility in communicating with a variety of host computer systems, the M-10e printer uses a Plug-In interface module. The IEEE1284 interface module is shipped with the printer unless another interface type is specified at the time of the order. The other interfaces available are a high speed (to 57.6K bps) serial interface, an Ethernet interface or an optional Universal Serial Bus (USB) interface.

## Interface Types

The Parallel interface will probably be the most useful in communicating with IBM PCs and compatibles. The RS232C Serial Interface allows connectivity to a number of other hosts. The USB Interface allows the printer to be connected to a computer that supports peripherals attached to a USB bus. Up to 127 peripherals can be connected to a single USB port. The interfaces available are a high speed (to 57.6k bps) serial interface, an Ethernet interface or an optional Universal Serial Bus (USB) interface

***WARNING:** Never connect or disconnect interface cables (or use a switch box) with power applied to either the host or the printer. This may cause damage to the interface circuitry in the printer/host and is not covered by warranty.*

### AVAILABLE INTERFACES



**CENTRONICS  
PARALLEL  
INTERFACE**



**RS232C SERIAL  
INTERFACE**



**USB INTERFACE**



**ETHERNET  
INTERFACE**

## 3.3 The Receive Buffer

The M-10e printer has the ability to receive a data stream from the host in one of two ways. The receive buffer may be configured to accept one print job at a time or multiple print jobs. The single job print buffer is generally used by software programs that wish to maintain control of the job print queue so that it can move a high priority job in front of ones of lesser importance. The multiple job buffer on the other hand prints all jobs in the order they are received by the printer and the order of printing cannot be changed.

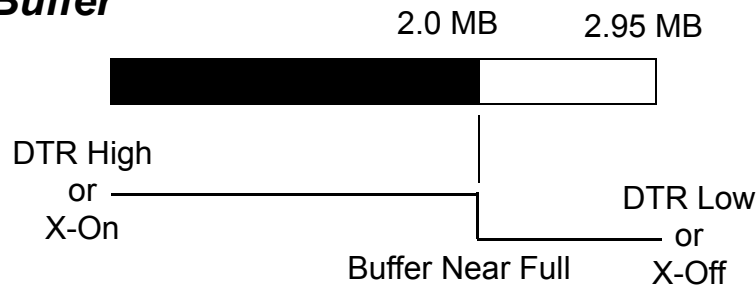
### Single Job Buffer

The printer receives and prints one job at a time. Each job must not exceed 2.95MB.

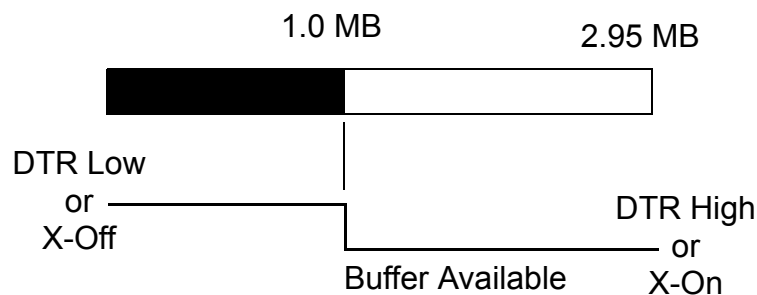
### Multi Job Buffer

The printer is able to continuously receive print jobs, compiling and printing other jobs at the same time. It acts much like a “print buffer” to maximize the performance of the host and the printer. When using the RS232 Serial Interface, the Multi Job Buffer uses either the **Ready/Busy** with **DTR** (pin 20) or **X-On/X-Off** flow control protocols. See those sections for more details. With an empty receiving buffer, the status of **DTR** is “high” (or an **X-On** status if using **X-On/X-Off**) meaning the printer is ready to receive data. When the receive buffer is holding 2.0MB of data (1MB from being full), **DTR** will go “low” (or an **X-Off** is sent) indicating the printer can no longer receive data. This condition is called “Buffer Near Full”.

## The Receive Buffer



The receiving buffer will not be able to receive more data again until a “Buffer Available” condition occurs. This takes place when the receiving buffer has emptied so that only 1MB bytes of data are being held (2.0MB bytes from being full). At this time, **DTR** will go “high” or an **X-On** is sent to tell the host that it can again receive data.



All printer error conditions (i.e., label out, ribbon out) will cause the printer to go busy (**DTR** “low” or **X-Off**) until the problem is corrected and the printer is placed online. The printer will also be busy if taken offline from the front panel.

## 3.4 IEEE 1284 Parallel Interface

The parallel interface for the M-10e printer is a Plug-In interface module that can be installed by the user. It conforms to the IEEE 1284 specification. It will automatically detect the IEEE 1284 signals and operate in the high speed mode. If it does not detect the IEEE 1284 signals, it will operate in the standard centronics mode, which is significantly slower. *For this reason, an interface cable and host interface conforming to the IEEE 1284 specification must be present to fully utilize the speed capabilities.* This interface also operates bi-directionally and can report the status of the printer back to the host.

### Electrical Specifications

Printer Connection	AMP 57-40360 (DDK) or equivalent
Cable Connection	AMP 57-30360 (DDK) or equivalent
Cable	IEEE 1284 Parallel, 10 ft. (3 m) or less
Signal Level	High = +2.4V to + 5.0V Low = 0V to -0.4V

### Data Streams

**<ESC>A..Job #1..<ESC>Z<ESC>A..Job #n..<ESC>Z**

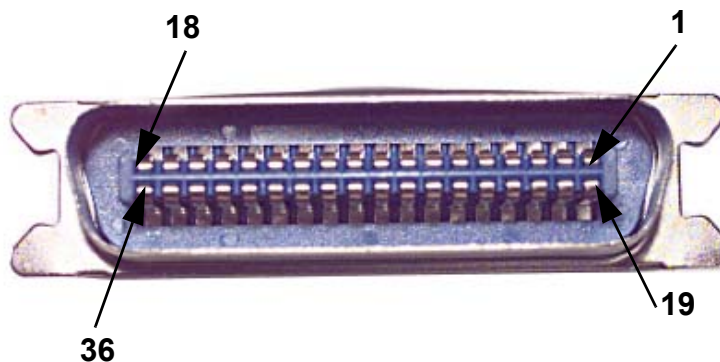
*NOTE: SATO does not recommend the use of mechanical data switches commonly called A/B switches, as they are known to damage both the computer and printer parallel ports.*

## IEEE 1284 Parallel Interface

PIN	SIGNAL	DIRECTION	PIN	SIGNAL	DIRECTION
1	$\overline{\text{STROBE}}$	To Printer	19	STROBE Return	Reference
2	DATA 1	To Printer	20	DATA 1 Return	Reference
3	DATA 2	To Printer	21	DATA 2 Return	Reference
4	DATA 3	To Printer	22	DATA 3 Return	Reference
5	DATA 4	To Printer	23	DATA 4 Return	Reference
6	DATA 5	To Printer	24	DATA 5 Return	Reference
7	DATA 6	To Printer	25	DATA 6 Return	Reference
8	DATA 7	To Printer	26	DATA 7 Return	Reference
9	DATA 8	To Printer	27	DATA 8 Return	Reference
10	$\overline{\text{ACK}}$	To Host	28	ACK Return	Reference
11	Busy	To Host	29	BUSY Return	Reference
12	Printer Error	To Host	30	PE Return	Reference
13	SELECT	To Host	31	$\overline{\text{INIT}}$	From Host
14	$\overline{\text{AUTOFD}}^{(1)}$	To Host	32	$\overline{\text{FAULT}}$	To Host
15	Not Used		33	Not Used	
16	Logic Gnd		34	Not Used	
17	FG	Frame Ground	35	Not Used	
18	+5V (Z=24K ohm)	To Host	36	$\overline{\text{SELECTIN}}^{(1)}$	From Host

(1) Signals required for IEEE 1284

### PIN ASSIGNMENTS IEEE 1284 CABLE END



## 3.5 RS232C Serial Interface

The High Speed Serial Interface is a Plug-in interface module that can be installed in the printer by the user.

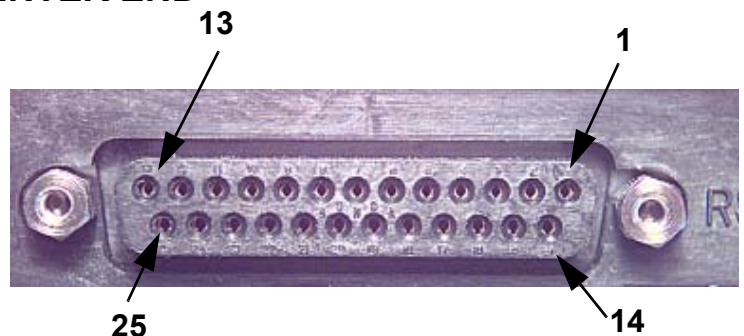
### General Specifications

Asynchronous ASCII	Half duplex communication Ready/Busy Hardware Flow Control Pin 20, DTR Control Pin 4, RTS Error Condition X-On/X-Off Software Flow Control Bi-Directional Communication
Data Transmission Rate	9600, 19200, 38400, 57600bps
Character Format	1 Start Bit (fixed) 7 or 8 data bits (selectable) Odd, Even or No parity (selectable) 1 or 2 Stop bits (selectable)

### Electrical Specifications

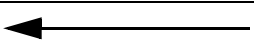
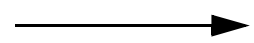
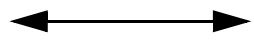



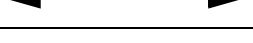
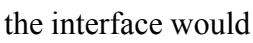
Connector	DB-25S (Female) DB-25P (Male), 50 ft. maximum length. For cable configuration, refer to Cable Requirements appropriate to the RS232C protocol chosen.
Signal Level	High = +5V to 12V Low = -5V to -12V

### PIN ASSIGNMENTS - RS232C PRINTER END



## RS232C Serial Interface

### Cable Requirements

DB9	DB25	HOST	INTERCONNECTION	DB25	PRINTER
1	1	FG		1	FG (Frame Ground)
2	3	RD		2	TD (Transmit Data)
3	2	TD		3	RD (Receive Data)
8	5	CTS		4	RTS (Request to Send)
7	4	RTS		5	CTS (Clear to Send)
4	20	DTR		6	DSR (Data Set Ready)
6	6	DSR*		20	DTR (Data Terminal Ready)
5	7	SG		7	SG (Frame Ground)

\* This connection at the host side of the interface would depend upon the pin that is being used as the Ready/Busy signal by the driving software. Typically on a PC, it would be either CTS (pin 5) or DSR (pin 6) on a DB-25 connector.

*NOTE: SATO does not recommend the use of mechanical data switches commonly called A/B switches, as they are known to damage both the computer and printer parallel ports.*

PIN	DIRECTION	SIGNAL DESCRIPTION
1	Reference	FG (Frame Ground)
2	To Host	TD (Transmit Data) - Data from the printer to the host computer. Sends X-On/X-Off characters or status data (Bi-Directional protocol)
3	To Printer	RD (Receive Data) - Data to the printer from the host computer
4	To Host	RTS (Request to Send) - Used with Ready/Busy flow control to indicate an error condition. RTS is high and remains high unless the print head is open (in this case, RTS would return to the high state after the print head is closed and the printer is placed back on-line) or an error condition occurs during printing (e.g. label out)
5	To Printer	CTS (Clear to Send) - When this line is high, the printer assumes that data is ready to be transmitted. The printer will not receive data when this line is low. If this line is not being used, it should be tied high (to pin 4).
6	To Printer	DSR (Data Set Ready) - When this line is high, the printer will be ready to receive data. This line must be high before data is transmitted. If this line is not being used, it should be tied high (to pin 20).
7	Reference	SG (Signal Ground)
20	To Host	DTR (Data Terminal Ready - This signal applies to Ready/Busy flow control. (The printer is ready to receive data when this pin is high. It goes low when the printer is off-line either manually or due to an error condition and while printing in the Single Job Buffer mode. It will also go low when the data in the buffer reaches the Buffer Near Full level.



## Ready/Busy Flow Control

Ready/Busy is the hardware flow control for the serial interface on the M-10e printer. By raising/lowering the voltage level on Pin 20 of the RS232 port, the printer notifies the host when it is ready to receive data. Pin 4 (**RTS**) and pin 20 (**DTR**) are the important signals on the printer for this method of flow control. The host must be capable of supporting this flow control method for it to function properly.

## X-On/X-Off Flow Control

**X-On/X-Off** flow control must be used whenever hardware (Ready/Busy) flow control is not available or desirable. Instead of a voltage going high/low at pin 20, control characters representing “Printer Ready” (**X-On** = 11 hexadecimal) or “Printer Busy” (**X-Off** = 13 hexadecimal) are transmitted by the printer on pin 2 (Transmit Data) to the host. In order for this method of flow control to function correctly, the host must be capable of supporting it. **X-On/X-Off** operates in a manner similar to the function of pin 20 (**DTR**) as previously explained. When the printer is first powered on it sends an **X-Off** when the “Buffer Near Full” level is reached and a **X-On** when the data level of the buffer drops below the “Buffer Available” mark. When the printer is taken off-line manually, it transmits an **X-Off** indicating it cannot accept data. When it is placed back on line manually, it sends an **X-On**, indicating it is again available for receipt of data. If an error occurs during printing (paper out, ribbon out), the printer sends an **X-Off** as soon as an error condition is detected. When the error is cleared and the printer placed back on-line, it transmits an **X-On** indicating it is again ready to accept data. Upon power up, if no error conditions are present, the printer will continually send **X-On** characters at five millisecond intervals until it receives a transmission from the host.

## Data Streams

The data streams for **X-On/X-Off** and **Ready/Busy** flow control are constructed in the same way as they are for Ready/Busy flow control.

**<ESC>A..Job #1..<ESC>Z<ESC>A..Job #n..<ESC>Z**

**Example: <ESC>A..Job#1..<ESC>Z**

**NOTE: All characters are in ASCII**

## 3.6 Universal Serial Bus (USB) Interface

The Universal Serial Bus (USB) interface is a Plug-In Interface Module that can be installed by the user. It requires a driver (shipped with each printer that has the interface installed) that must be loaded on your PC and the PC must be configured to support USB peripherals using Windows 98 or above. Details for loading the USB driver are contained in the USB Interface Manual that is shipped with each printer with a USB Optional interface installed. Up to 127 devices may be connected to a USB port.

## General Specifications

Connector:	USB Type B Plug
Cable:	10 ft (3 m) max.
Host:	Windows 98 or above with USB Port

## Electrical Specifications

Power Supply: Bus Power through cable  
Power Consumption: +5V@80ma

### 3.7 Local Area Network (LAN) Optional Interface

The Local Area Network (LAN) Interface is a Plug-in interface module that can be installed in the printer by the user. It requires a driver (shipped with each printer) that has the interface installed. The driver must be loaded on your PC and the PC must be configured to run one of the supported network protocols using a 10/100BaseT LAN connection. Details for loading the LAN driver are contained in the LAN Interface Manual that is shipped with each printer with a LAN Optional Interface installed.

## General Specifications

Type 10/100BaseT  
Connector: RJ-45 Receptical  
Cable: Catagory 5

## Electrical Specifications

Power Supply Powered from printer  
Refer to the manual and CD supplied with the interface card.

### 3.8 Bi-Directional Communications

This is a two way communications protocol between the host computer and the printer thus enabling the host to check printer status. When Bi-Com 4, Bi-Com 3 or Bi-Com 2 communications is selected on the serial interface card, there is no busy signal from the printer. The host must request the complete status from the printer, including ready/busy.

Refer to the Operator's and Technical Manual for complete information.

### 3.9 Accessory (EXT) Connector

The EXT connector on the rear panel of the M-10e printer is intended for use with the external printer accessories such as label rewinders or applicators. The 14 pin Centronics type connector provides a choice of four different output signals along with various error conditions. A DB-9 to 14 pin Centronics adapter cable is provided for legacy applications.

## Accessory (EXT) Connector (Cont)

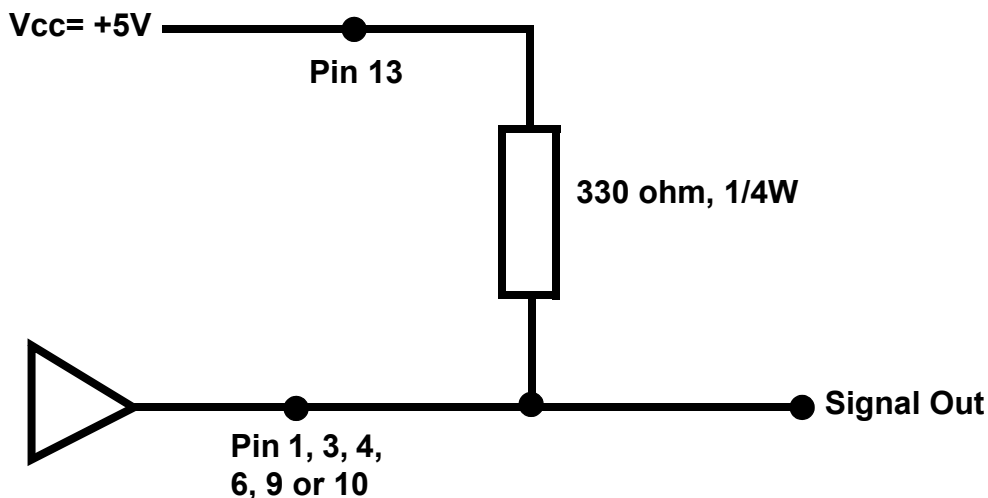
Old 14 Pin  
DB-9 Centronics

### Pin Assignments

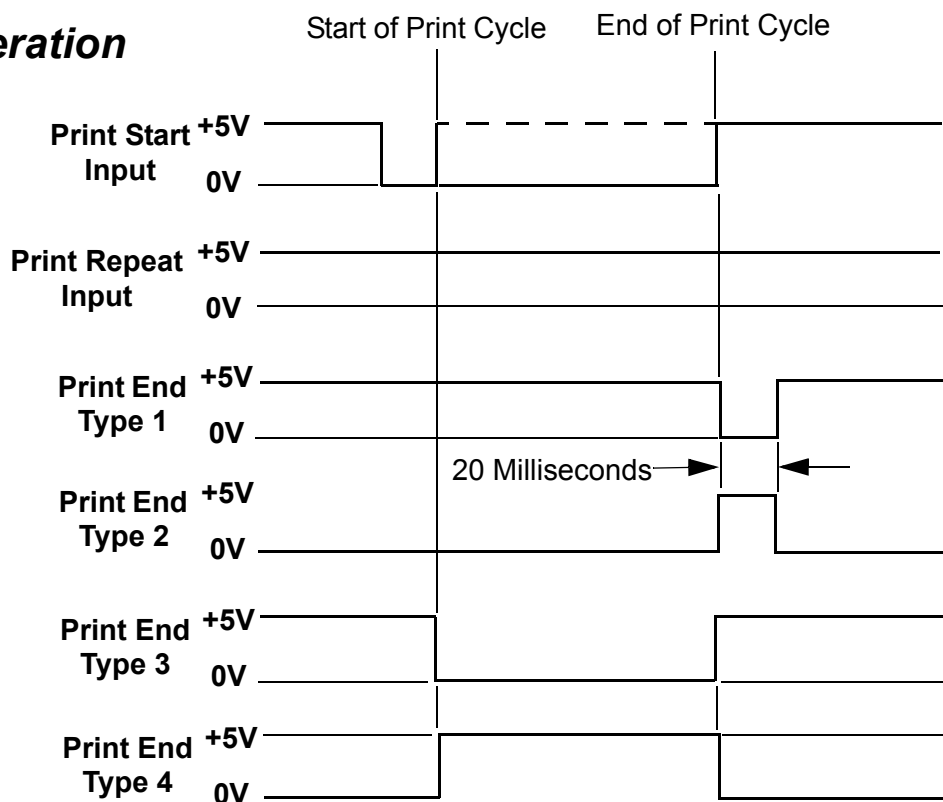
PIN	PIN	DIRECTION	SIGNAL DESCRIPTION
1	13	To Host	Vcc +/-5V
2	10	To Host	Ribbon Near End - This pin goes high when the amount of ribbon on the unwind shaft is approximately 46 feet (14 m). The output will be low when the ribbon is completely out.
3	4	To Host	Error - This pin goes low when the printer detects an error condition such as head open or receiving buffer is full.
4	7	To Printer	Reprint - A duplicate of the last label in a print job will be reprinted when this signal is received.
5	5	To Printer	Print Start - The printer will print one label when this pin is pulled to ground. This signal must be enabled by placing switch DSW3-5 on the Control Panel in the OFF position.
6	6	To Host	End Print - It is used to drive an applicator or other external device requiring synchronization with the print cycle. You may choose between four types of output signals using control panel DSW3-6 and DSW3-7 selections. See timing charts on next page.
7	1	To Host	Label Out - This pin goes low (0V) when a label error exists.
8	3	To Host	Ribbon Out - This pin goes low (0V) when ribbon is out.
9	2	Reference	Signal Ground
	8	To Printer	Isolated Power Source for signal input.
	9	To Host	When Mode 1 in LCD selected High Voltage = On-Line Print Job is waiting. When Mode 2 in LCD selected High Voltage = On-Line. This goes low (0V) when printer Off -Line
	11		Reserved
	12	To Host	+24V +/- 10% @2A - Power for external devices
	14		Frame Ground

## Accessory (EXT) Connector (Cont)

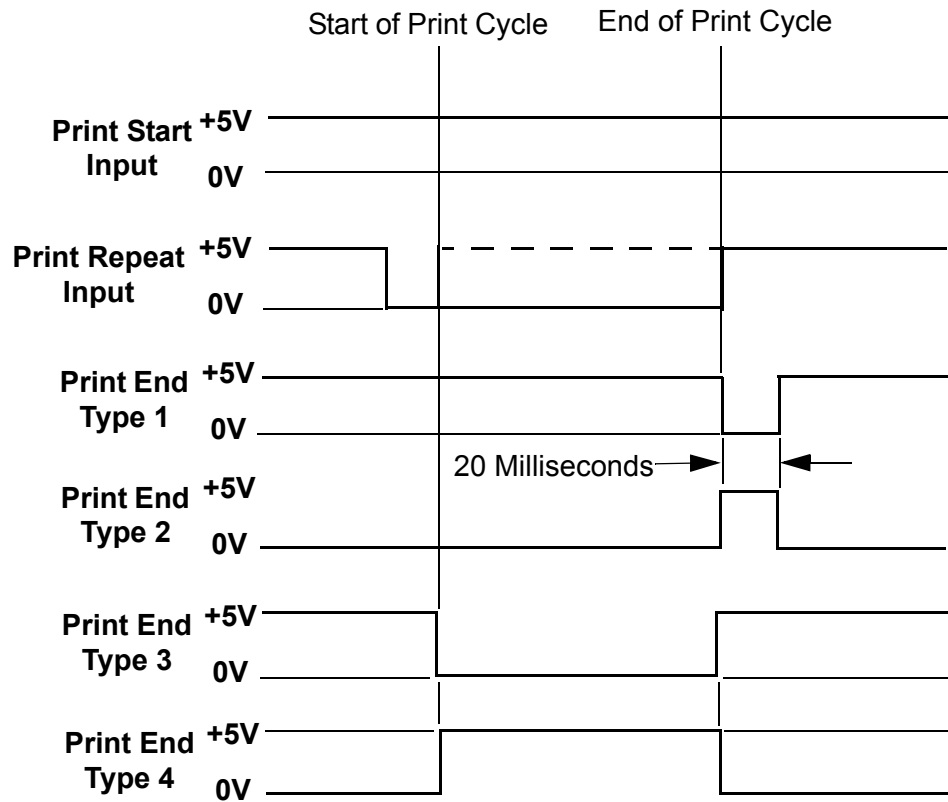
*NOTE: The signals on pins 1, 3, 4, 6, 9 and 10 each have an open collector output. These pins normally measure +.07V maximum when a true condition exists. If a false condition occurs, the voltage will drop to 0V. To achieve a signal level of +5V, you must add a 330 ohm, 1/4 W pull-up resistor between the open collector output pin and Vcc (pin 13) as illustrated. This will provide a signal level of +5V for a true condition and 0V when a false condition exists. The maximum voltage that can be applied to these pins is +50V and the maximum current they can sink is 500 milliamps.*



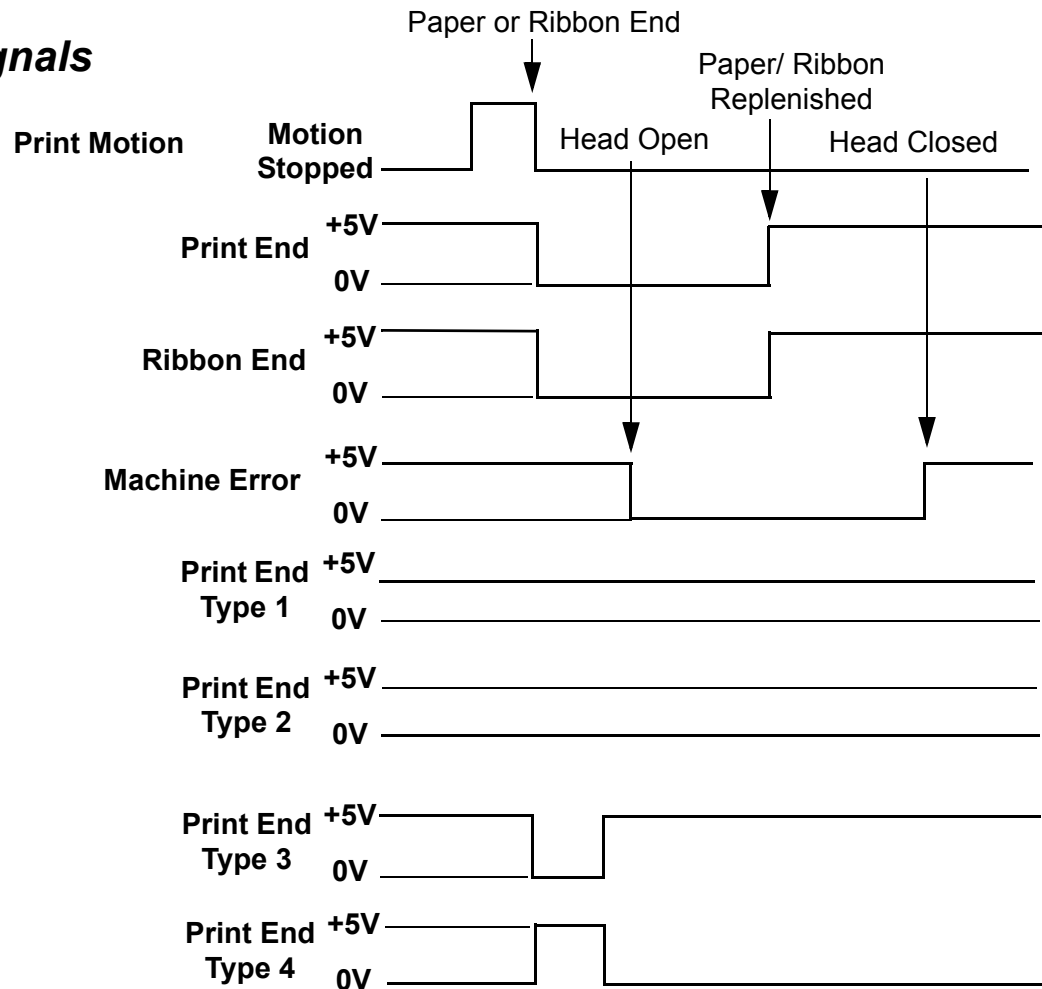
## Standard Operation



## Repeat Print



## Error Signals





## ***Electrical Checks and Adjustments***

---

### ***4.1 Overview***

This section describes how to check M-10e Printer voltage levels and adjust threshold sensor voltages.

The power supply converts 125 VAC into regulated DC voltages. The printer uses: +5V and +24V. These DC voltages are not adjustable, however you can measure these DC voltages at test points located on the PCB. Section 4.3 contains procedures for measuring DC voltage levels.

You can adjust threshold voltage levels for label sensors. These adjustments are made to allow for variations in the characteristics of the labels used with the printer. If you cannot calibrate the label sensor voltage level within the specified voltage range, you should reposition the label sensor by following the adjustment procedures included in this section. After completing the label sensor adjustment procedures, perform the label sensor voltage level adjustment procedure.

You can check or adjust:

- *Power Voltage*
- *Label Sensors*
- *Ribbon Sensor*
- *Pitch Offset*

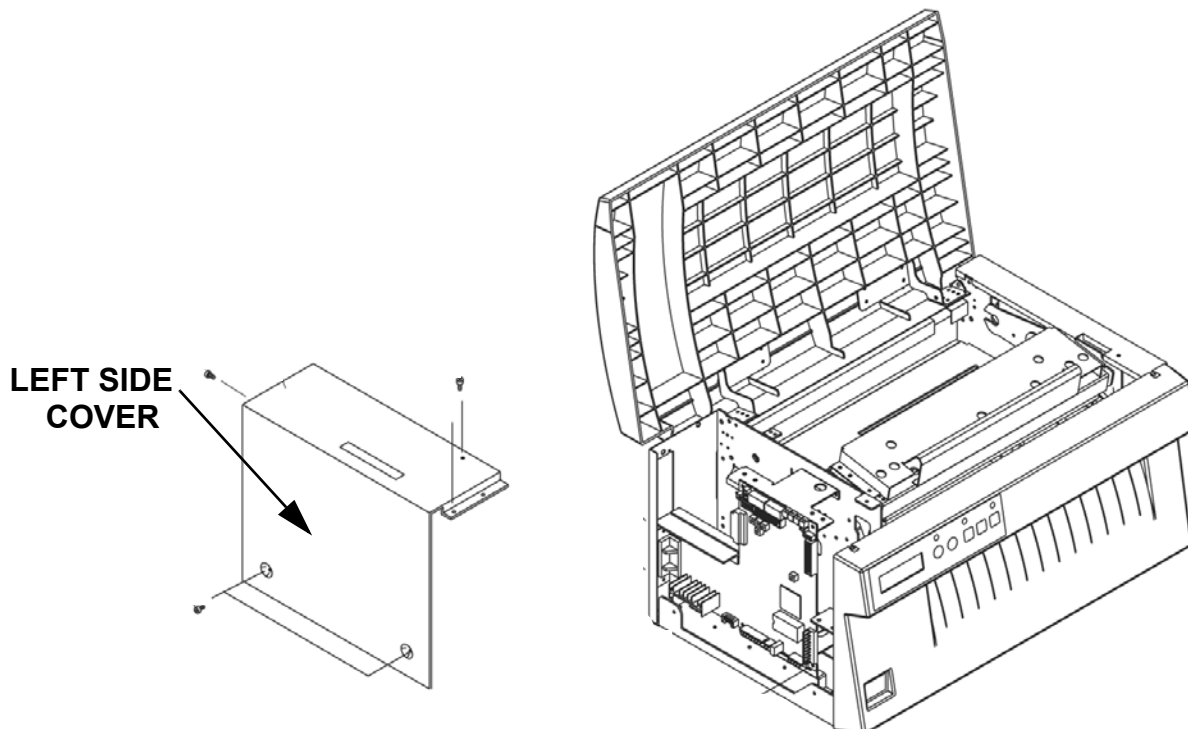
**Checks and adjustments in this section require standard metric tools.  
Also required:**

**Digital Multimeter required for use with SATO Test Module (Voltage Checker)  
Part #RH1773100 and is required for most electrical adjustments.**

## 4.2 Steps Prior to Some Procedures

Some procedures in this section require access to potentiometers and the test point connector located on the main circuit board. Raise the Access Cover and detach the left side cover for accessing the main circuit board.

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Raise and remove the Access Cover.
3.	Unfasten (5) screws from the left side cover and remove.



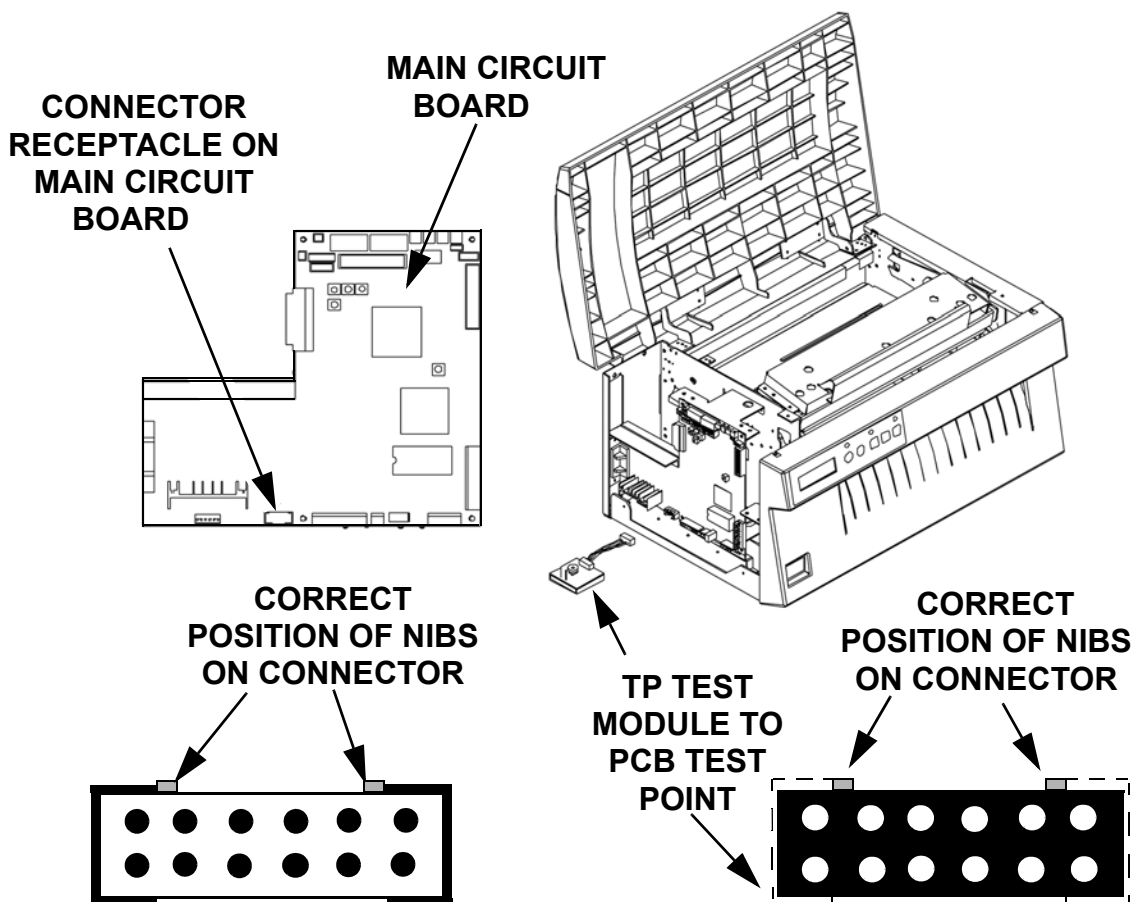


## 4.3 DC Power Voltage Checks

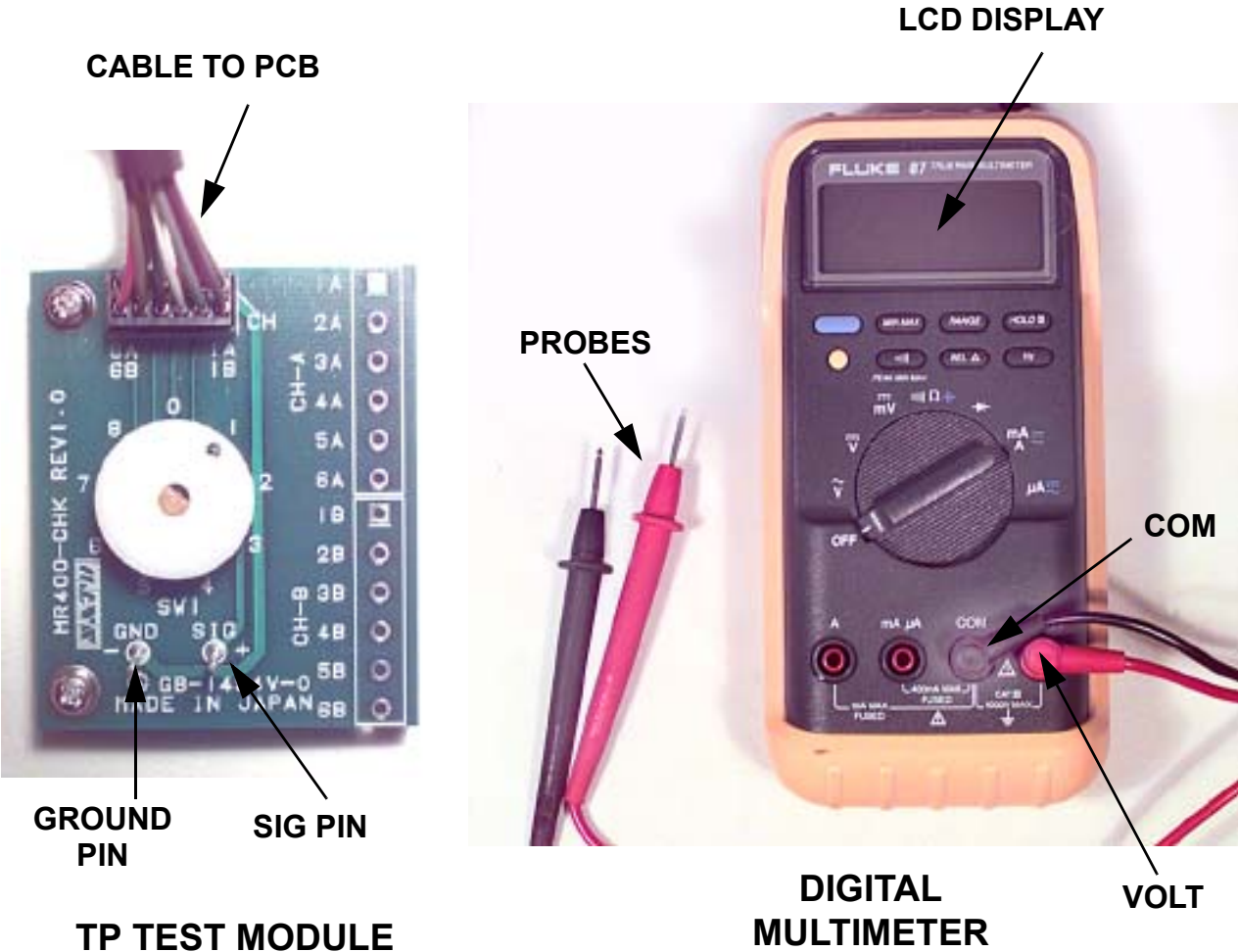
To check voltage levels, first check the fuses (Section 6.12) and replace if necessary. Refer to Section 4.2 and remove the left side cover and perform the following steps.

Additional equipment required: TP Test Module  
Digital Multimeter

STEP	PROCEDURE
1.	Refer to illustrations and charts on pages 4-3, 4-4 and 4-5. Attach the connector from the TP Test Module to the test port on the main circuit board. Note the correct positioning of the connector. Nibs on the connector are placed down in the receptacle on the main circuit board in the forward position.
2.	Attach the ground wire of the multimeter to the TP Test Module Gnd pin.
3.	Attach the positive wire of the multimeter to the +SIG pin on the TP Test Module terminal.
4.	Turn the printer on and rotate the dial to a dial POS on the TP Test Module. Record the values from the Multimeter LCD.
5.	Confirm voltages are correct. If not, then replace the power supply. Refer to Section 6.10.
6.	After performing the tests, switch off the power and replace the left side cover.



DC Power Voltage Checks



Dial POS	DISC	VOLTAGE RANGE	TP TEST MODULE
	SG		
	NC		
0	+5V	+4.8V to +5.2V	CHA3 (+5.0V) - CHA1 (GND)
1	+2V	+1.9V to +2.1V	CHA4 (+2.0V) - CHA1 (GND)
2	+3.3V	+3.1V to +3.5V	CHA5 (+3.3V) - CHA1 (GND)
3	+24V	+23.5V to 24.5V	CHA6 (+24.0V) - CHA1 (GND)

TEST POINT CHART

NOTE: The power supply voltages are not adjustable. All voltages must read within +/- 10% of the nominal value for correct operation of the printer.

## 4.4 Potentiometer Assignments

VR TO ADJUST	ITEM	POSITION DIAL
VR5 (IM)	Eye Mark Sensor	4
VR6 (GAP)	Gap Sensor	5
VR7 (PS)	Label Penetrating Sensor	8
VR8 (PE)	Paper End Sensor	_____
VR9 (PITCH)	Pitch (Use with VR3 on Cover)	_____

**POTENTIOMETERS ARE  
LOCATED ON MAIN  
CIRCUIT BOARD**

VR TO ADJUST	ITEM
VR1	Print Darkness
VR2	Offset
VR3	Pitch Correction (Use with VR9 on Main PCB)
VR4	Display

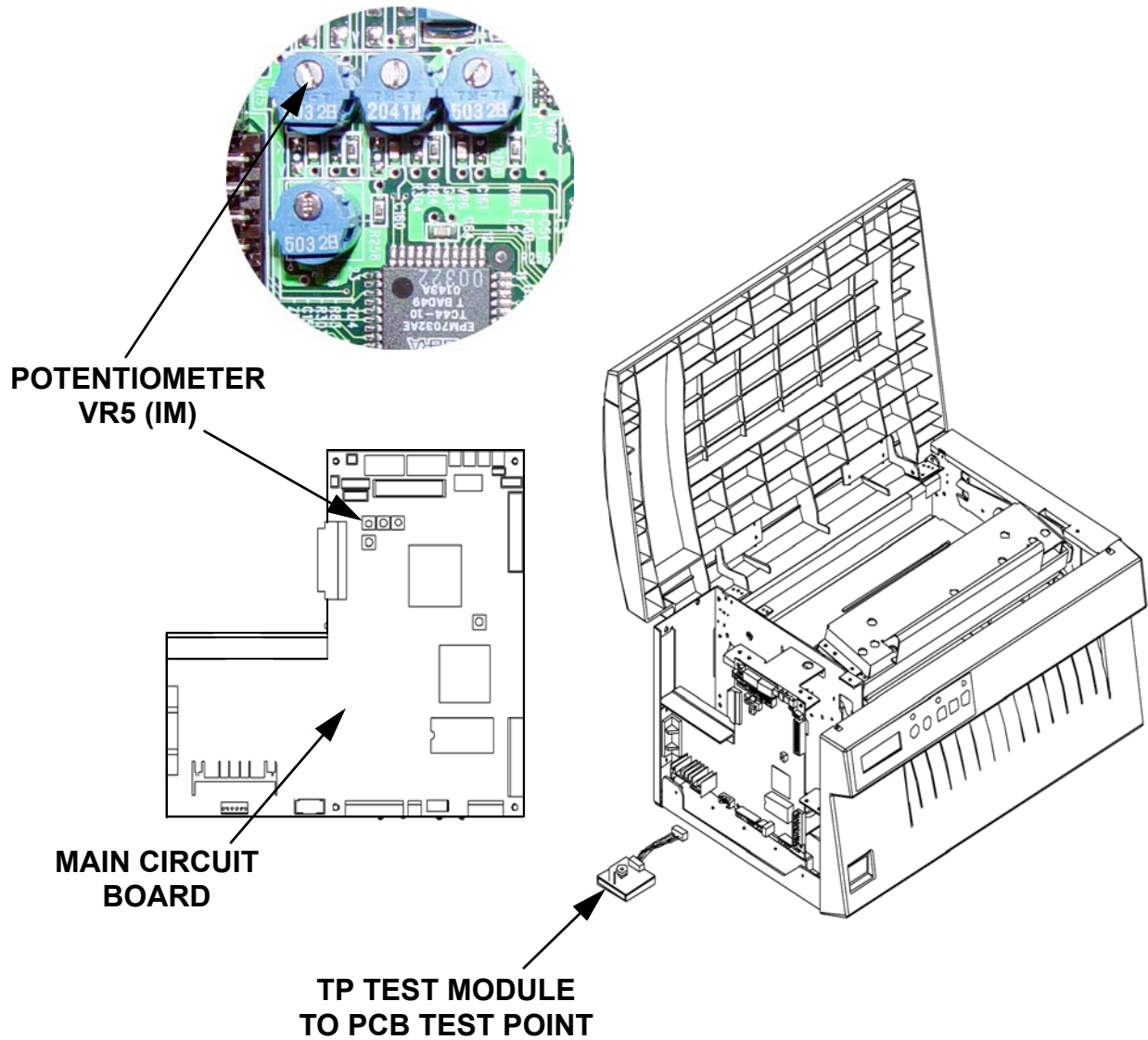
**POTENTIOMETERS ARE LOCATED  
UNDERNEATH A FLIP COVER ON THE  
FRONT PANEL**

## 4.5 Adjustment of Eye-Mark Sensor

Additional equipment required: TP Test Module  
Digital Multimeter

STEP	PROCEDURE
	Refer to Section 4.2 and remove the left side cover for access to the main circuit board.
1.	Refer to illustrations and charts on pages 4-3, 4-4 and 4-7.  Turn <b>VR5 (IM)</b> potentiometer on the main circuit board all the way to the left, until you hear the CLICK sound.
2.	Set the digital multimeter to DC voltage measurement mode. Attach the connector from the TP Test Module to the test port on the main circuit board. Note the correct positioning of the connector. Nibs on the connector are placed down in the receptacle on the circuit board in the forward position. Set the dial of the TP Test Module to 4.
3.	Connect (+) probe of the multimeter to Sig+ and (-) probe to pin GND.
4.	Switch ON the power of the printer.
5.	For Low level (no “Eye-Mark” part) adjustment, put paper part in the sensor. Then adjust the electrical level with <b>VR5</b> on the main circuit board so that it will measure less than 0.5V.
6.	For High level (Eye-Mark” part) adjustment, put paper part with the “Eye-Mark” part in the sensor and check the electrical level. If the level difference is +1.0V more than the Low level, it is acceptable. If not, return to STEP 5 and readjust <b>VR5</b> .
7.	Standard values:     Low level (no “Eye-Mark” part): +0.5V or less.  High level (“Eye-Mark”): Low level +1.0V or higher. If these values do not result, try the following: a) Repeat the process b) Clean the sensor c) Verify sensor is operational d) Replace labels with higher quality labels. e) Perform factory reset.

# Adjustment of Eye-Mark Sensor

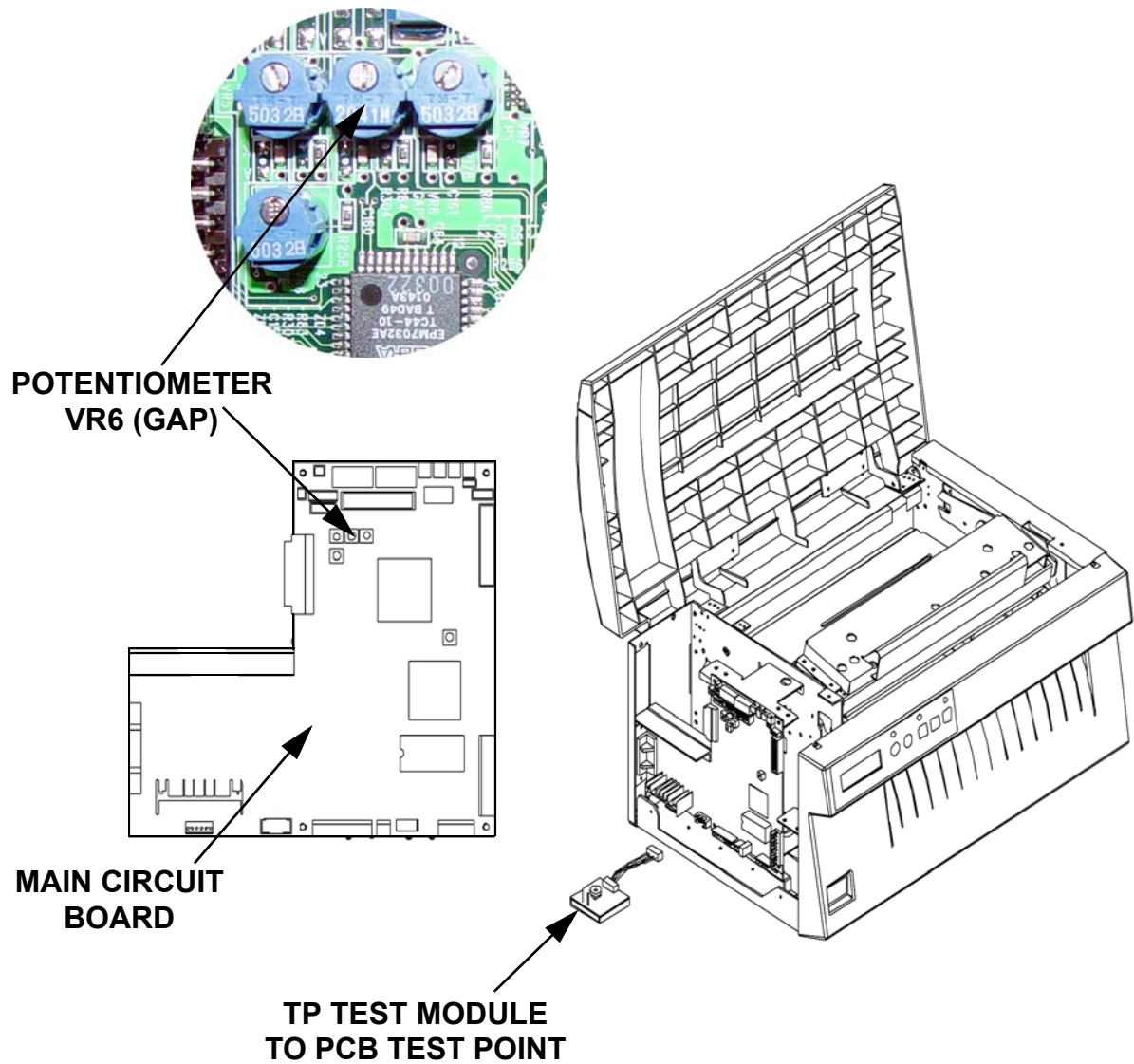


## 4.6 Adjustment of Gap Sensor

Additional equipment required: TP Test Module  
Digital Multimeter

STEP	PROCEDURE
	Refer to Section 4.2 and remove the left side cover for access to the main circuit board.
1.	Refer to illustrations and charts on pages 4-3, 4-4 and 4-9.  Turn <b>VR6 (GAP)</b> potentiometer on the main circuit board all the way to the left, until you hear the CLICK sound.
2.	Set the digital multimeter to DC voltage measurement mode. Attach the connector from the TP Test Module to the test port on the main circuit board. Note the correct positioning of the connector. Nibs on the connector are placed down in the receptacle on the circuit board in the forward position. Set the dial of the TP Test Module to 5.
3.	Connect (+) probe of the multimeter to Sig+ and (-) probe to pin GND.
4.	Switch ON the power of the printer.
5.	For Low level (Label Gap part with backing only) adjustment, put label gap part in the sensor. Then adjust the electrical level with <b>VR6</b> on the main circuit board so that it will measure less than 0.5V.
6.	For High level (paper part) adjustment, put paper part in the sensor and check the electrical level. If the level difference is +1.0V more than the Low level, it is acceptable. If not, return to STEPS 5 & 6 and readjust <b>VR6</b> .
7.	Standard values:      Low level (gap): below +0.5V  High level (paper part): Low level +1.0V or higher. If these values do not result, try the following: a) Repeat the process b) Clean the sensor c) Verify sensor is operational and replace if necessary. d) Replace labels with higher quality labels. e) Perform factory reset.

## Adjustment of Gap Sensor





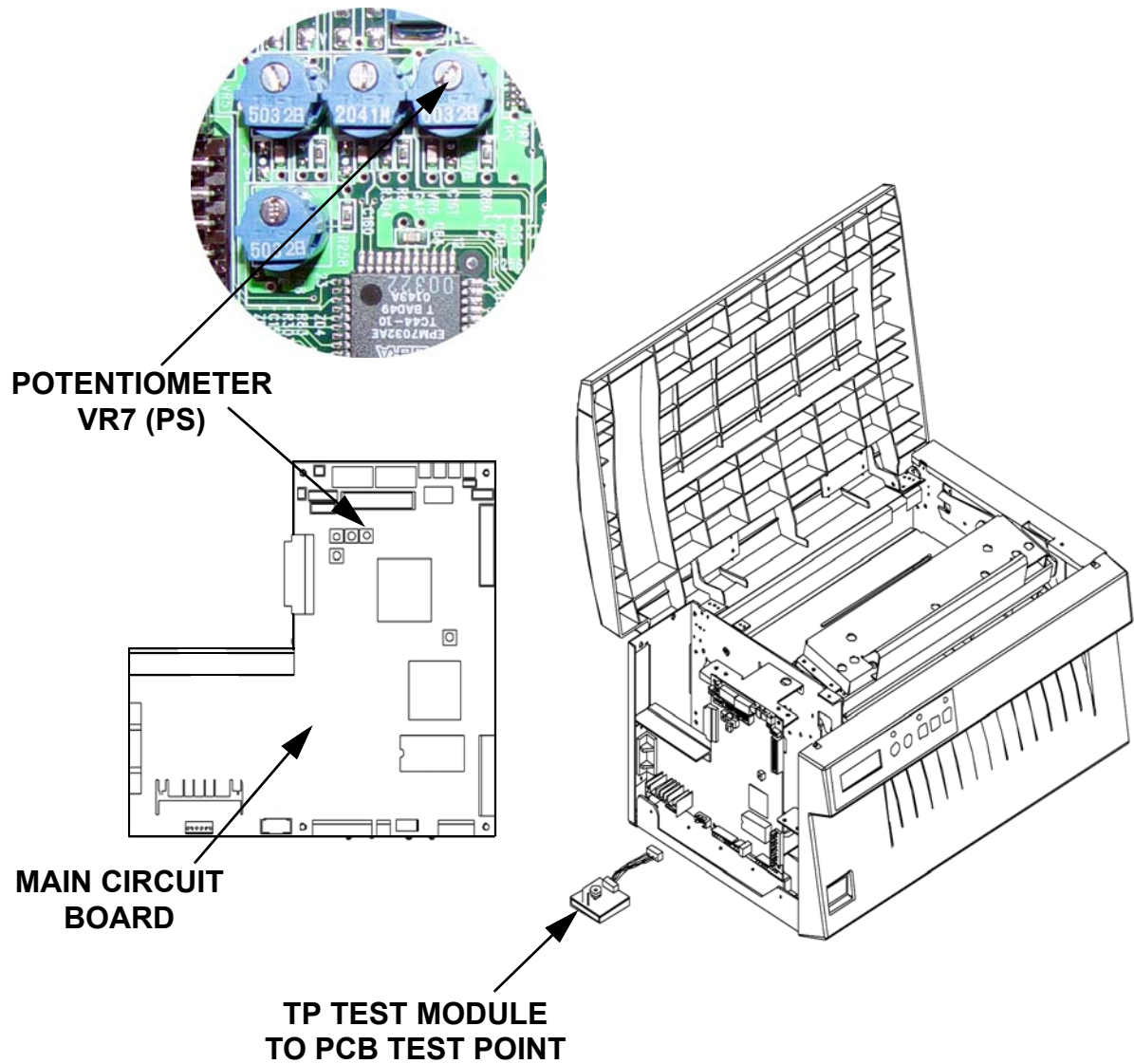
## 4.7 Adjustment of Label Penetrating Sensor

Additional equipment required: TP Test Module  
Digital Multimeter

STEP	PROCEDURE
	Refer to Section 4.2 and remove the left side cover for access to the main circuit board.
1.	Refer to illustrations and charts on pages 4-3, 4-4 and 4-11.  Turn <b>VR7 (PS)</b> potentiometer on the main circuit board all the way to the left, until you hear the CLICK sound.
2.	Set the digital multimeter to DC voltage measurement mode. Attach the connector from the TP Test Module to the test port on the main circuit board. Note the correct positioning of the connector. Nibs on the connector are placed down in the receptacle on the circuit board in the forward position. Set the dial of the TP Test Module to 8.
3.	Connect (+) probe of the multimeter to Sig+ and (-) probe to pin GND.
4.	Switch ON the power of the printer.
5.	For Low level (with label) adjustment, set the backing paper (not including the eye-mark) of the label at the sensor. Then adjust the electrical level with <b>VR7</b> on the main circuit board so that it will measure less than 1.0V.
6.	For High level (without label) adjustment, ensure that nothing is set at the sensor and check the electrical level. If the level difference is +3.0V, it is acceptable. If not, return to STEPS 5 & 6 and readjust <b>VR7</b> .
7.	Standard values:    Low level (Label Backing Paper): below +1.0V  High level (without label): +3.0V or higher. If these values do not result, try the following: a) Repeat the process b) Clean the sensor c) Verify sensor is operational and replace if necessary d) Replace labels with higher quality labels. e) Perform factory reset.



## Adjustment of Label Penetrating Sensor

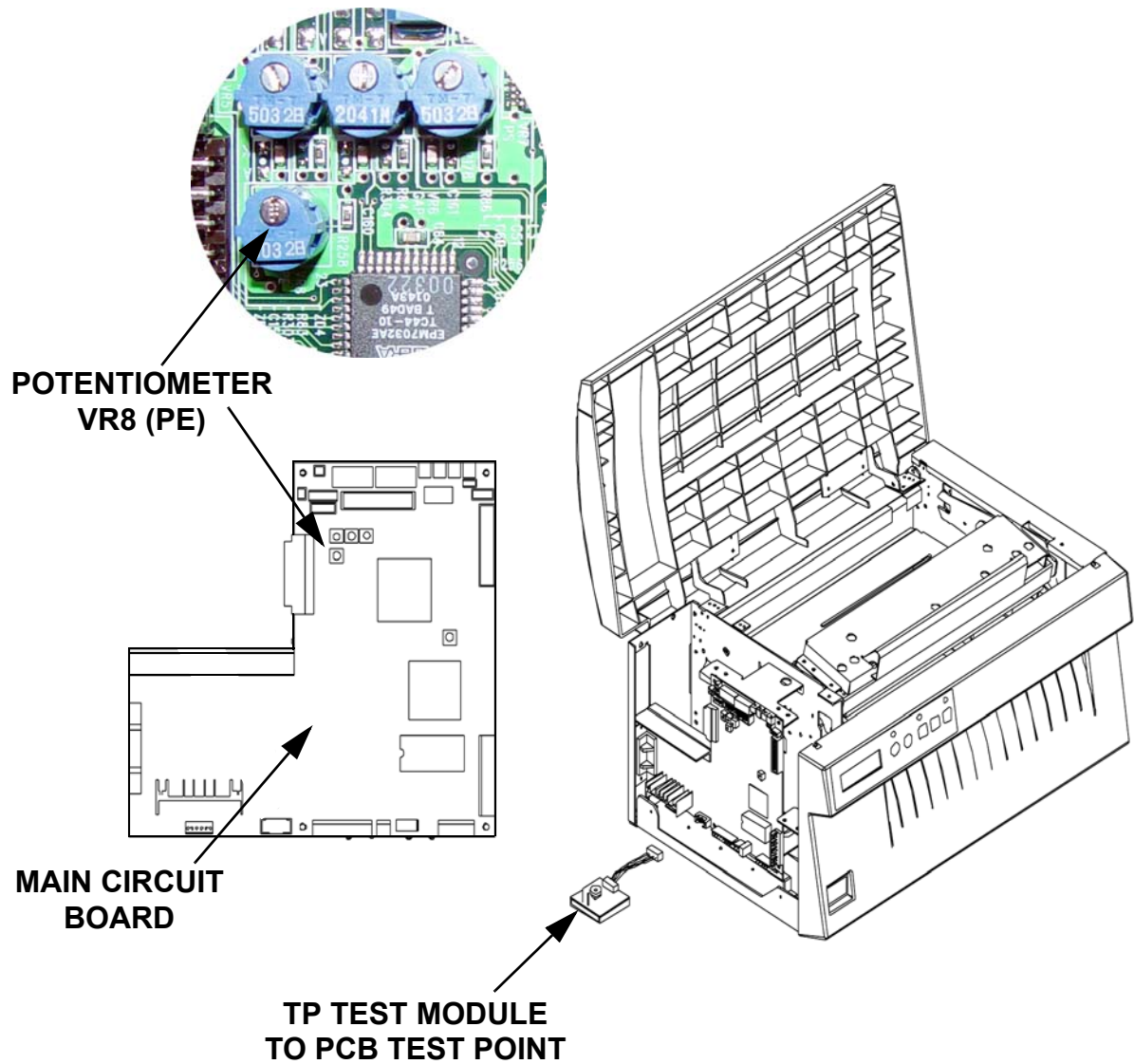


## 4.8 Adjustment of Paper End Sensor



Additional equipment required: TP Test Module  
Digital Multimeter

STEP	PROCEDURE
1.	<p>Refer to Section 4.2 and remove the left side cover for access to the main circuit board.</p> <p>Refer to illustrations and charts on pages 4-3, 4-4 and 4-13.</p> <p>Turn <b>VR8 (PE)</b> potentiometer on the main circuit board all the way to the left, until you hear the CLICK sound.</p>
2.	Set the digital multimeter to DC voltage measurement mode. Attach the connector from the TP Test Module to the test port on the main circuit board. Note the correct positioning of the connector. Nibs on the connector are placed down in the receptacle on the circuit board in the forward position.
3.	Connect (+) probe of the multimeter to Sig+ and (-) probe to the end of the 2A check pin on the TP Test Module.
4.	Switch ON the power of the printer.
5.	For Low level (without label) adjustment, ensure that nothing is set at the sensor. Then adjust the electrical level with <b>VR8</b> on the main circuit board so that it will measure less than +1.0V.
6.	For High level (with label) adjustment, set the backing paper (not including the eye-mark) at the sensor and check the electrical level. If the level is more than +3.0V, it is acceptable. If not, return to STEPS 5 & 6 and readjust <b>VR8</b> .
7.	<p>Standard values:    Low level (without label): below +1.0V</p> <p>                              High level (with label): +3.0V or higher. If these values do not result, try the following:</p> <ol style="list-style-type: none"> <li>Repeat the process</li> <li>Clean the sensor</li> <li>Verify sensor is operational and replace if necessary</li> <li>Replace labels with higher quality labels.</li> <li>Perform factory reset.</li> </ol>



## Adjustment of Paper End Sensor



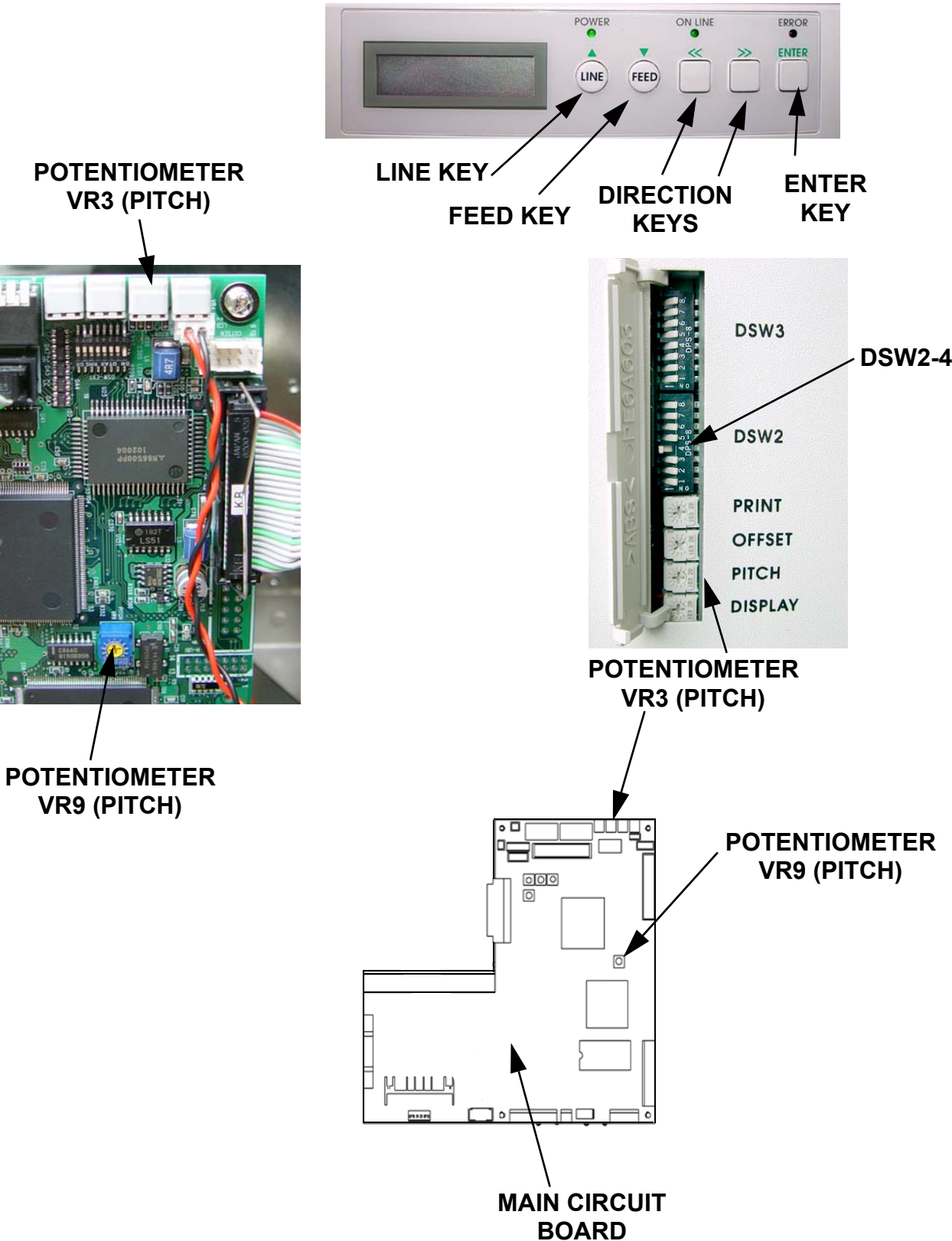
## 4.9 Adjustment of Pitch Correction (Part 1)

STEP	PROCEDURE
	Refer to Section 4.2 and remove the left side cover for access to the main circuit board.
1.	Refer to illustrations and charts on pages 4-5 and 4-16. Record all current dip switch positions, then place all switches in the <b>OFF</b> position.
2.	Align <b>VR9 (PITCH)</b> on the main circuit board and <b>VR3 (PITCH VR)</b> on the top cover to the center position.
3.	Place <b>DSW2-4</b> in the <b>ON</b> position.
4.	Press the <b>LINE</b> and <b>FEED</b> keys simultaneously while turning on the power. Release the keys when the printer beeps. The following screen will appear.
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>MAINTENANCE MODE</b>  <b>DIPSW2-4 ON&gt;OFF</b> </div>
5.	Place the <b>DSW2-4</b> in the <b>OFF</b> position and the following screen will appear.
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>FACTORY MODE</b> </div>
6.	Press the <b>ENTER</b> key to display the next screen.
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>COUNTER MODE</b>  <b>NONE</b> </div>
7.	Check that <b>NONE</b> is displayed and press the <b>ENTER</b> key.
8.	Select the print size by pressing the   keys. The default is LARGE. Start the test print by pressing <b>ENTER</b> key.
9.	Press the <b>ENTER</b> key once to stop the printing and <b>ENTER</b> again to resume. Warning: This test activates all the heating elements on the print head and therefore should be used only for testing purposes with full width labels to avoid damaging the print head.
10.	Use the scale of the test print to check for print skew, and then adjust using VR9 (PITCH) on the main circuit board.
11.	Stop the test print using the ENTER key and power <b>OFF</b> the printer.
	The scale of the test print is to be at the beginning of the label.
	The VR9 (PITCH) adjustment range is +/- 3.75mm.

## Adjustment of Pitch Correction (Part 2)

STEP	PROCEDURE
	<p>Adjustment continues from Part 1</p> <p>Refer to illustrations on page 4-16.</p>
1.	Be sure <b>VR3 (PITCH VR)</b> on the top cover is aligned to the center position.
2.	Power on the printer while pressing the <b>FEED</b> key. Release the Feed key after the beep sound and the printer will display the Test Print Mode message on the LCD panel.
	
3.	Press the <b>ENTER</b> key to display the next screen.
	
4.	Press the <b>LINE/FEED</b> keys to adjust the print size width.
5.	Press the <b>ENTER</b> key and perform the user test print. Stop the test print using the <b>ENTER</b> key.
6.	Use the scale of the test print to check for print skew, and then adjust using <b>VR3 (PITCH VR)</b> on the top cover.
7.	Stop the test print using the <b>ENTER</b> key and power <b>OFF</b> the printer.
	<p>Make sure the print position is appropriate.</p> <p>The VR3 (PITCH VR) adjustment range is +/- 3.75mm.</p> <p>NOTE: If there is no change in the print position when VR3 (PITCH VR) is adjusted, replace the main circuit board. Refer to Section 6.8.</p>

Adjustment of Pitch Correction (Part 1 and 2)



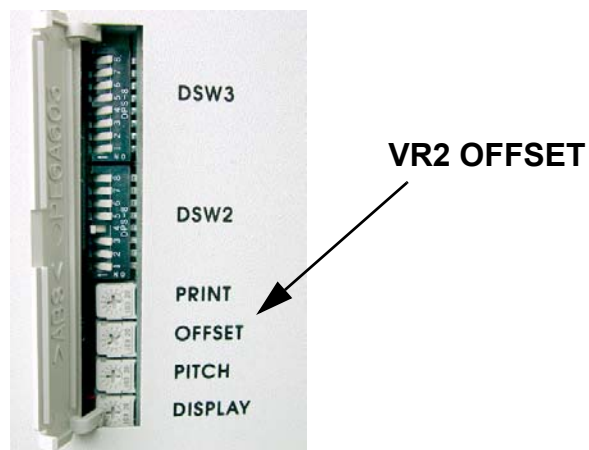
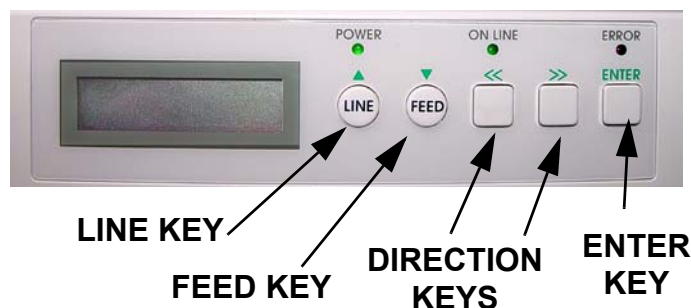


## 4.10 Adjustment of Front Feed, Back Feed (Tear Off & Cutter)

STEP	PROCEDURE
1.	Align <b>VR2 (OFFSET VR)</b> on the top cover to the center position.
2.	Power on the printer while pressing the <b>FEED</b> key. Release the Feed key after the beep sound and the printer will display the Test Print Mode message on the LCD panel.
3.	Press the <b>ENTER</b> key to display the next screen.
4.	Press the <b>LINE/FEED</b> keys to adjust the print size width.
5.	Press the <b>ENTER</b> key and perform the user test print. Stop the test print using the <b>ENTER</b> key.
6.	Adjust the <b>VR2 (OFFSET VR)</b> on the top cover until the label stop position has reached the specification position.(+/-3.75mm)
7.	Stop the test print using the ENTER key and power <b>OFF</b> the printer.
	<p>NOTE: Since VR2 (OFFSET VR) is a variable stop position, the print position will not change. Use the VR3 (PITCH VR) to turn the print position to variable.</p> <p>Make sure the print position is appropriate.</p> <p>The VR2 (OFFSET VR) adjustment range is +/- 3.75mm.</p> <p>For Cutter, make sure the cut position is at the center of the label skimming unit.</p> <p>NOTE: If there is no change in the stop position when VR2 (OFFSET VR) is adjusted, replace the main circuit board. Refer to Section 6.4.</p>

TEST PRINT MODE  
CONFIGURATION

TEST PRINT SIZE  
26CM

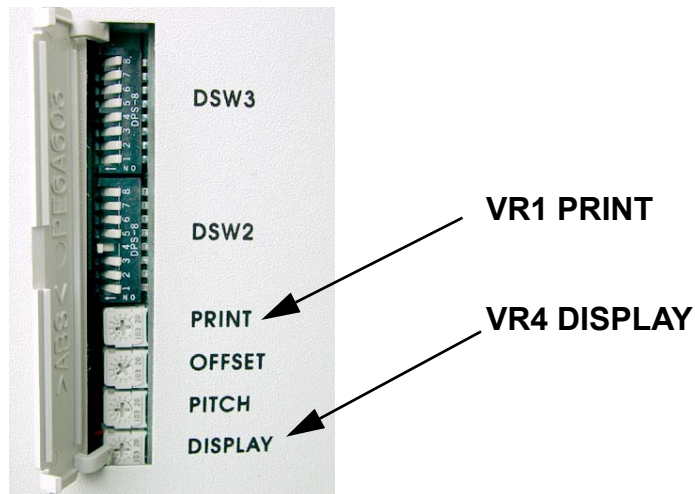


## 4.11 Adjustment of Print Darkness

STEP	PROCEDURE
1.	Adjust <b>VR1 (PRINT VR)</b> on the top cover until a suitable print darkness is obtained. If a suitable print is not obtained, set the print darkness in the user mode.

## 4.12 Adjustment of LCD Contrast

STEP	PROCEDURE
1.	Check that the LCD display backlight is lit and the characters are displayed.
2.	Adjust <b>VR4 (DISPLAY VR)</b> on the top cover until a suitable display contrast is obtained. If the display appears abnormal, replace the LC/Keyboard PCB (Section 6.9) or the Main Circuit Board (Section 6.4).





## 4.13 Checking the Ribbon Sensor

STEP	PROCEDURE
1.	Switch <b>DSW2-4</b> to the <b>OFF</b> position on the top cover.
2.	Remove the printer ribbon.
3.	Power on the printer while pressing the <b>FEED</b> key. Release the Feed key after the beep sound and the printer will display the Test Print Mode message on the LCD panel.
4.	Press the <b>ENTER</b> key to display the next screen.
5.	Press the <b>ENTER</b> key and check the occurring of ribbon and error under user test print.
6.	Turn <b>OFF</b> the power supply.
7.	Set the ribbon at the printer.
8.	Repeat Step 3, (Power on the printer etc.)
9.	Press the <b>ENTER</b> key .
10.	Press the <b>ENTER</b> key again and ensure that the user test print operation can function normally.
11.	Turn <b>OFF</b> the power.

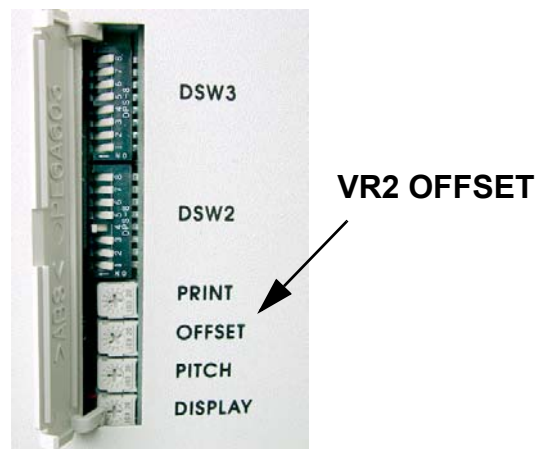
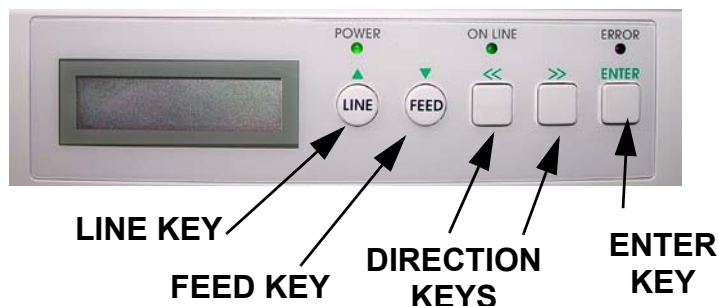
TEST PRINT MODE  
CONFIGURATION

TEST PRINT SIZE  
26CM

TEST PRINT MODE  
CONFIGURATION

TEST PRINT SIZE  
26CM

NOTE: If unable to detect ribbon end, replace the ribbon sensor unit. Refer to Section 6.17





## ***Mechanical Adjustments***

---

### **5.1 Overview**

The SATO M-10e Printer contains adjustable sub-assemblies. This means that during your regular maintenance, your service technicians are able to make adjustments to reset the printer to factory specifications thereby ensuring optimum performance of your printer.

The main mechanical sub-assemblies are:

- *Drive Belt Assembly*
- *Print Head Assembly*

In this section you will find procedures for:

- *Timing Belt Adjustment*
- *Head Facing Adjustment*
- *Print Head Front and Rear Alignment*
- *Ribbon Tension Adjustment*

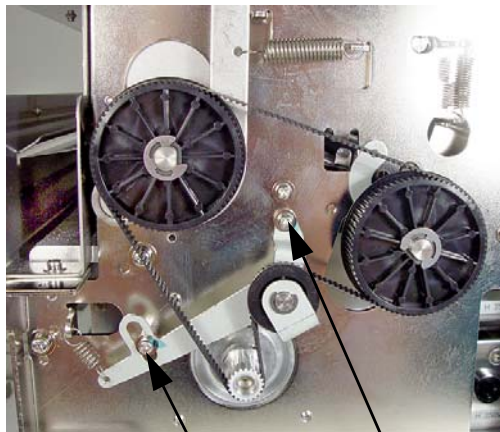
**Checks and adjustments in this section require standard metric tools.  
Other equipment is listed where required.**

## 5.2 Timing Belt Adjustment

Required Equipment: 1 Kg Tension Gauge

STEP	PROCEDURE
1.	Switch the printer <b>OFF</b> and disconnect the power cord.
2.	Raise and remove the access cover
3.	Unfasten (5) screws from the right side cover and remove.
4.	Pull the center of the timing belt with the tension gauge and note the tension reading when the belt is moved 1 to 2mm. If the tension reading is not within the range of 100-500g, adjust the tension of the belt by loosening the screws in the order a to b. Loosen screw b about one complete turn. The belt will be automatically stretched through the spring.
5.	Tighten the screws in the order a to b. NOTE: The screws must be tighten in this order to achieve accurate tension.
NOTE: The deflection between the platen pulley and the feed pulley is to be 1-2mm. If unable to obtain a suitable tension, replace the timing belt. Refer to Section 6.4	

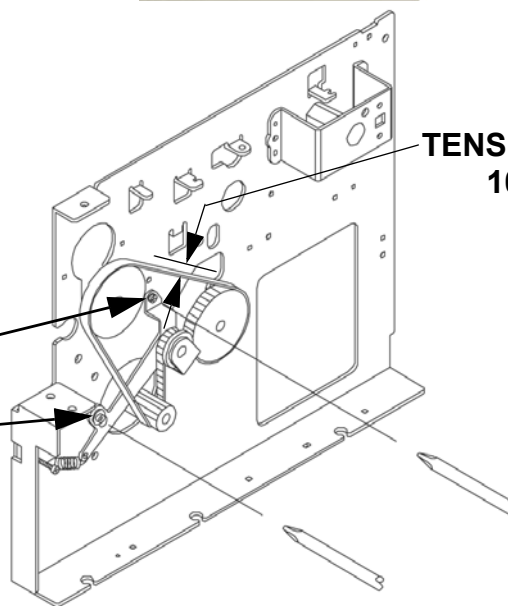
**UNFASTEN (5) SCREWS  
AND REMOVE THE  
RIGHT SIDE COVER**



SCREW "b"

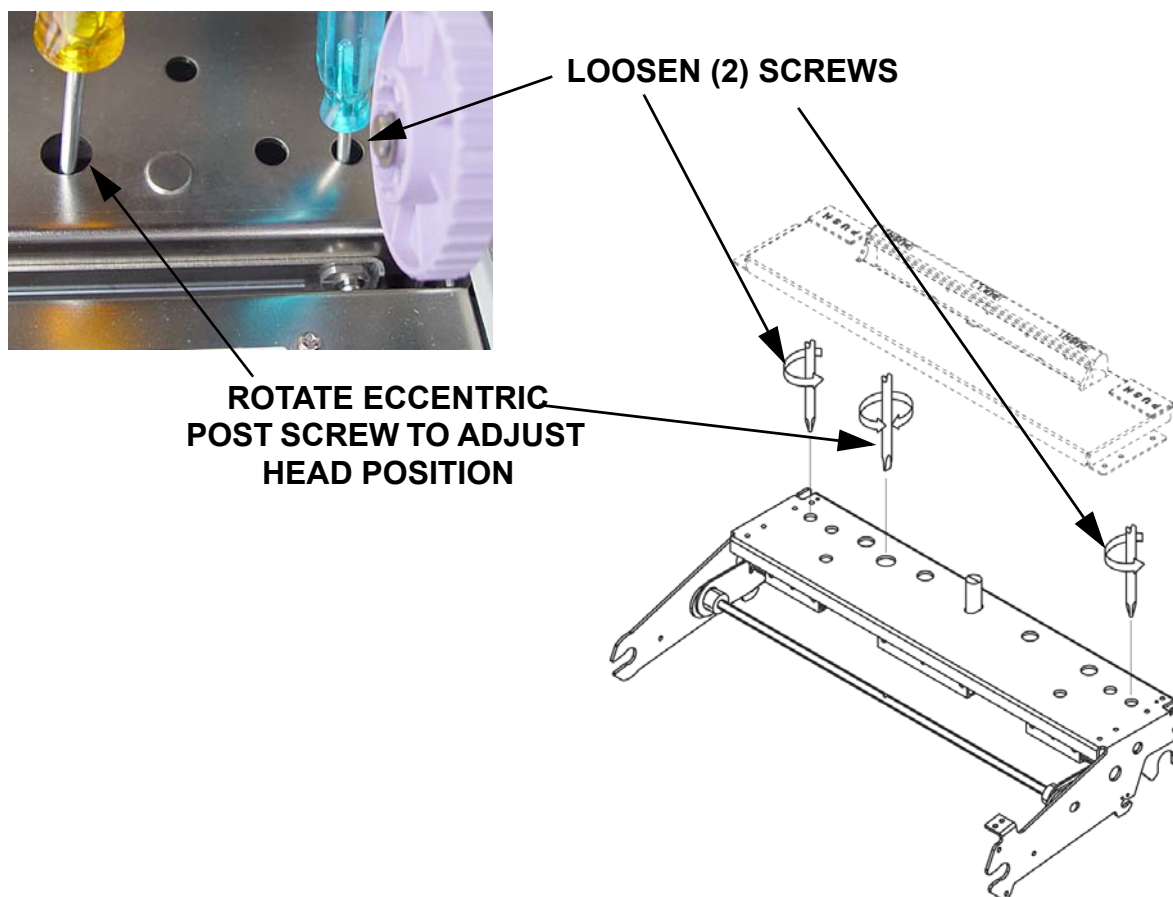
SCREW "a"

**TENSION RANGE  
100-500g**



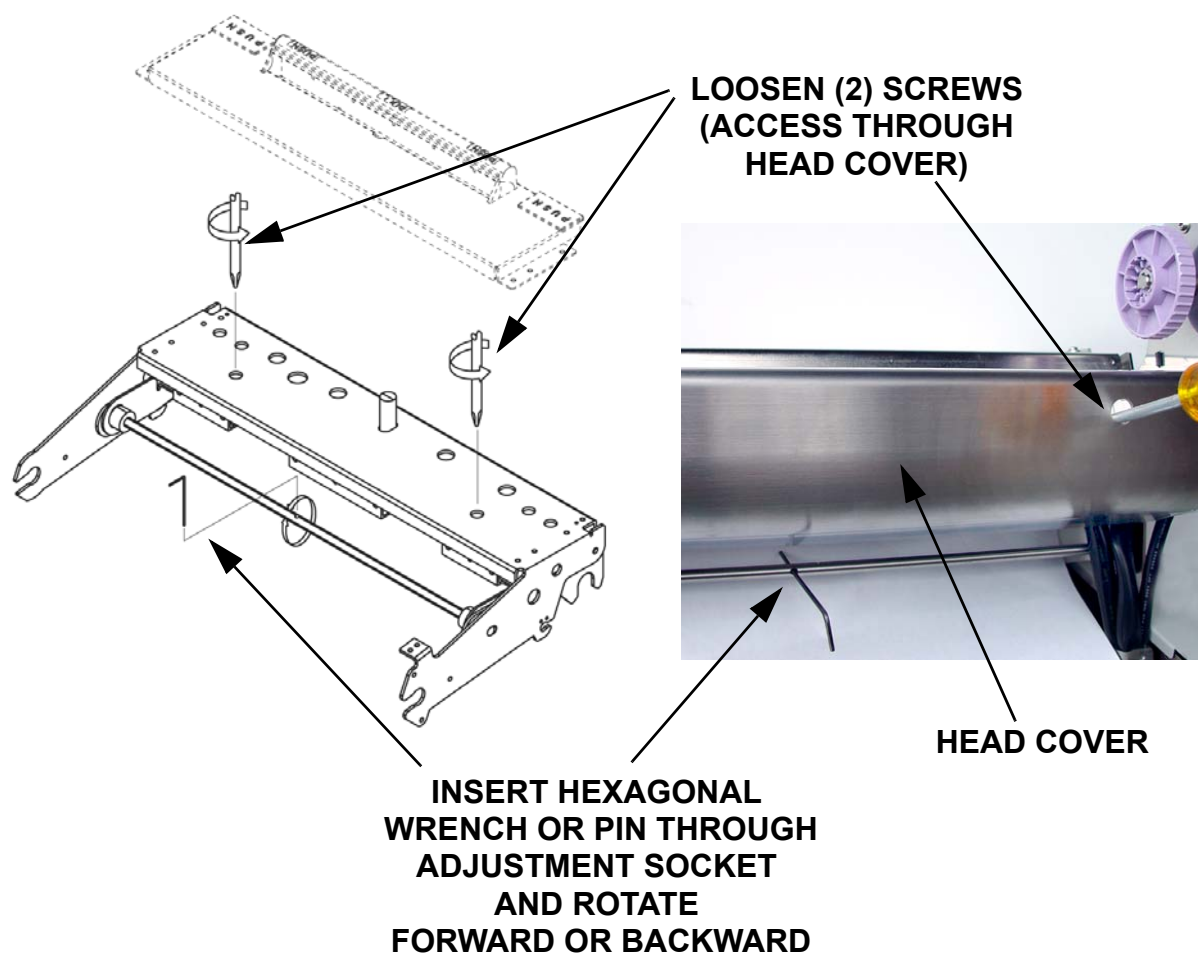
## 5.3 Head Facing Adjustment (Print Balance)

STEP	PROCEDURE
1.	Switch the printer <b>OFF</b> and disconnect the power cord.
2.	Raise the access cover.
3.	Carry out continuous printing while ensuring that ribbon is not rewinding. (NA for ribbon on Direct Thermal Units.)
4.	Loosen the (2) screws as shown in illustrations.
5.	Rotate the eccentric post screw to adjust the head position. When correct head position is achieved, tighten the screws.
	Perform this procedure with Section 5.4 for best print value.



## 5.4 Print Head Front and Rear Alignment (Print Balance)

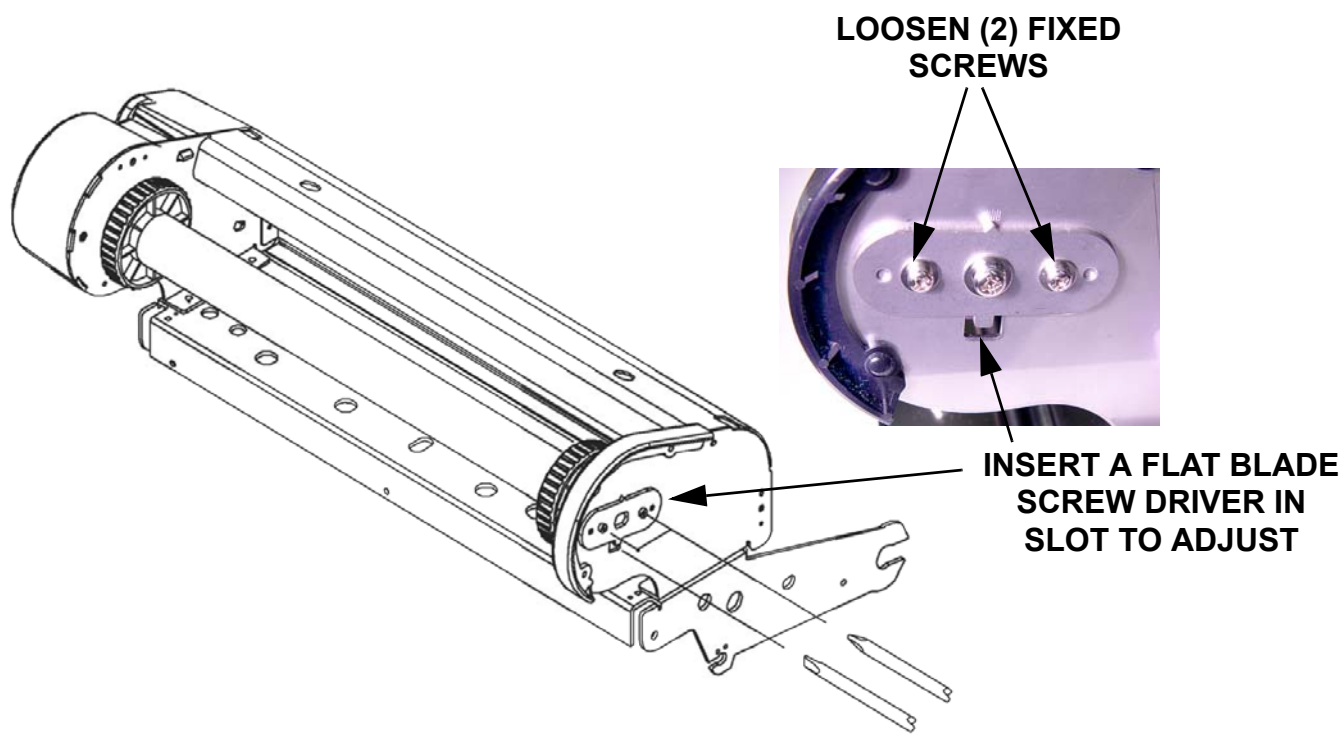
STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Raise the access cover.
3.	Loosen (2) adjustment fixed screws.
4.	Insert hexagonal wrench or pin into adjustment socket. Adjust forward or backward by turning the axle.
	Backward rotation shifts the head position backward. Forward rotation shifts the head position forward.
	Perform this procedure with Section 5.3 to achieve the best print value.



## 5.5 Ribbon Tension Adjustment Part 1

If the ribbon is not smooth across the adjust plate (ribbon wrinkle), adjustment is required. To remedy the problem, perform the following adjustments.

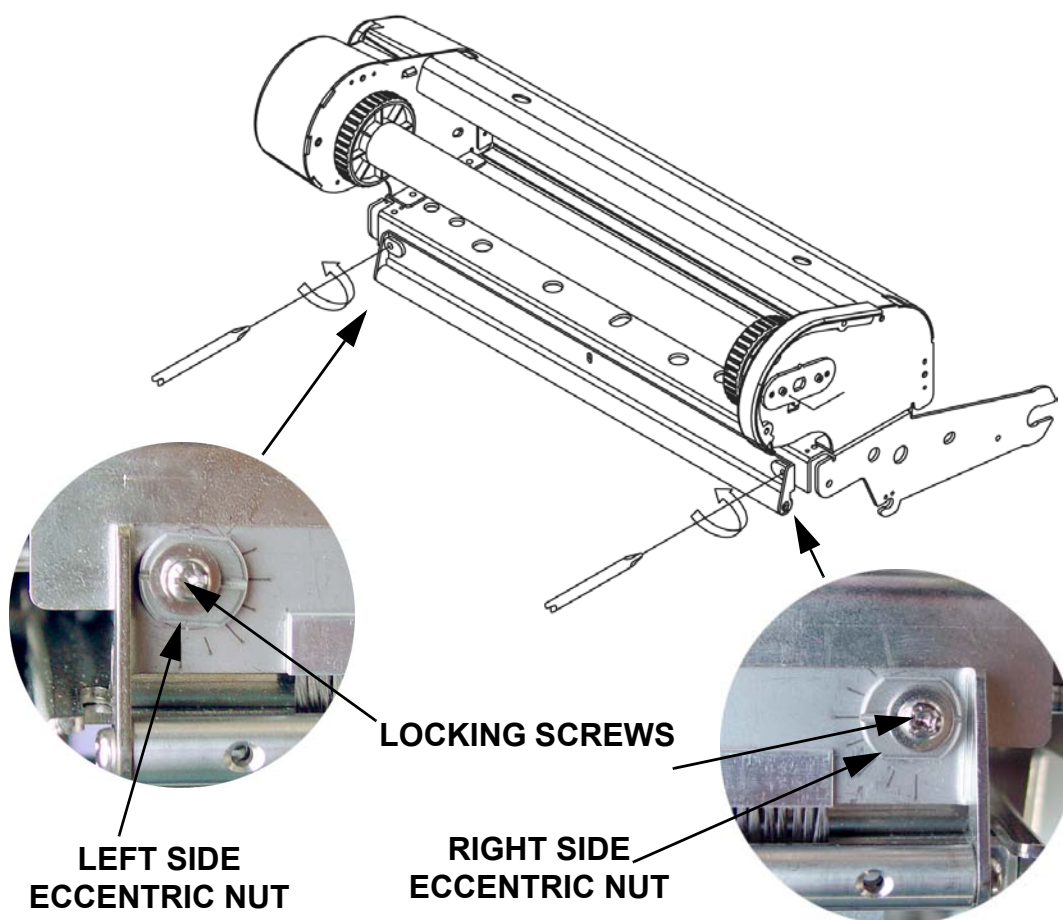
STEP	PROCEDURE
1.	Connect the power cord to the printer and AC outlet. Turn the printer <b>ON</b> .
2.	Raise the access cover and load the ribbon and label stock. (NA for ribbon on Direct Thermal Units.)
3.	Check for even ribbon tension by watching the ribbon movement as it moves upward toward the ribbon rewind spindle. If it appears uneven, (wrinkles) proceed to Step 4.
4.	Reposition the ribbon adjust plate by loosening the two fixed screws of the adjust plate at the left side of the ribbon rewinder.
5.	Insert a flat blade screwdriver in the slot and adjust the front and back of the ribbon to obtain equal tension.
6.	After adjustment, tighten the two fixed screws.
7.	Verify that the label and ribbon are still tracking correctly. If still out of adjustment perform Part 2, next page.





## Ribbon Tension Adjustment (Part 2)

STEP	PROCEDURE
	Continue from Part 1 if necessary.
1.	Loosen the locking screws, (2 places). Turn each eccentric nut clockwise to adjust the height of the ribbon turning bar to eliminate ribbon wrinkles. (NA for ribbon on Direct Thermal Units.)
2.	Check for even ribbon tension by watching the ribbon movement as it moves upward toward the ribbon rewind spindle. If it appears uneven, (wrinkles) proceed to Step 4.
3.	When wrinkles have been eliminated, hold the eccentrics in place with the 10mm wrench and tighten the locking screws loosened in Step 2.
4.	After adjustment, verify that the label and ribbon are still tracking correctly.





## ***Replacement Procedures***

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### ***6.1 Overview***

The SATO M-10e Printer contains replaceable components and subassemblies. This section contains step-by-step instructions for removing and replacing the following components and sub-assemblies.

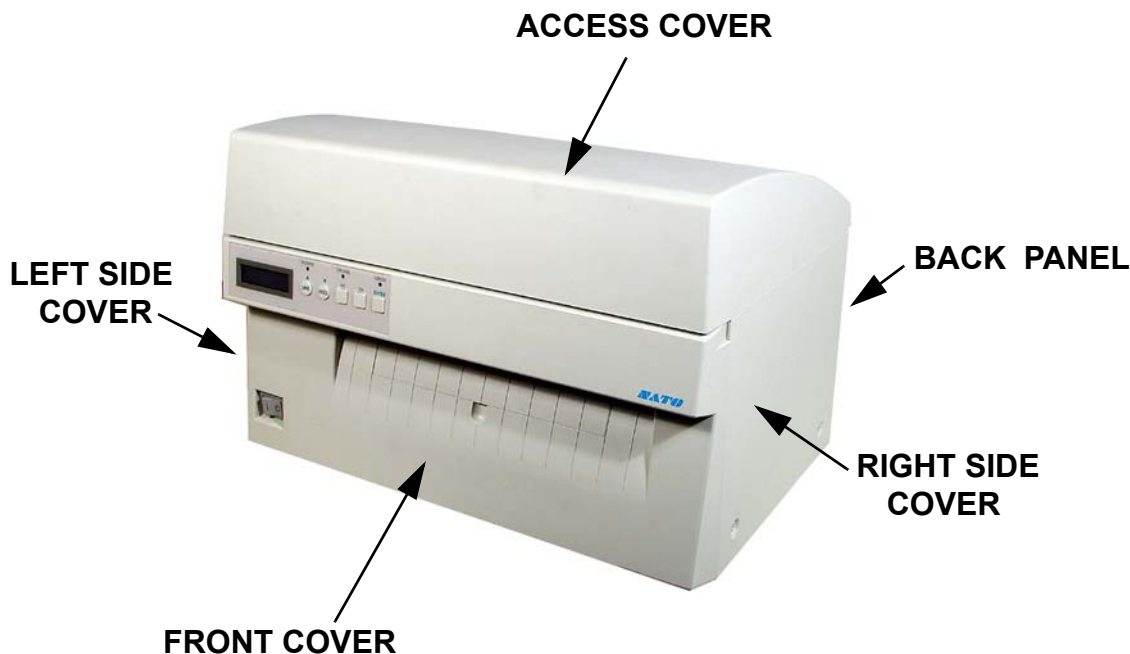
- *Print Head*
- *Timing Belt*
- *Platen Roller*
- *Feed Roller*
- *LC /Keyboard PCB*
- *Main Circuit Board*
- *Interface PCB*
- *Power Supply*
- *Stepper Motor*
- *Fuses*
- *EEPROM*
- *Ribbon PCB*
- *Pitch Sensors*
- *Label Penetrating Sensor*
- *Ribbon Sensor*
- *Cutter Unit*

Procedures in this section require standard metric tools.  
Other equipment is listed where required.

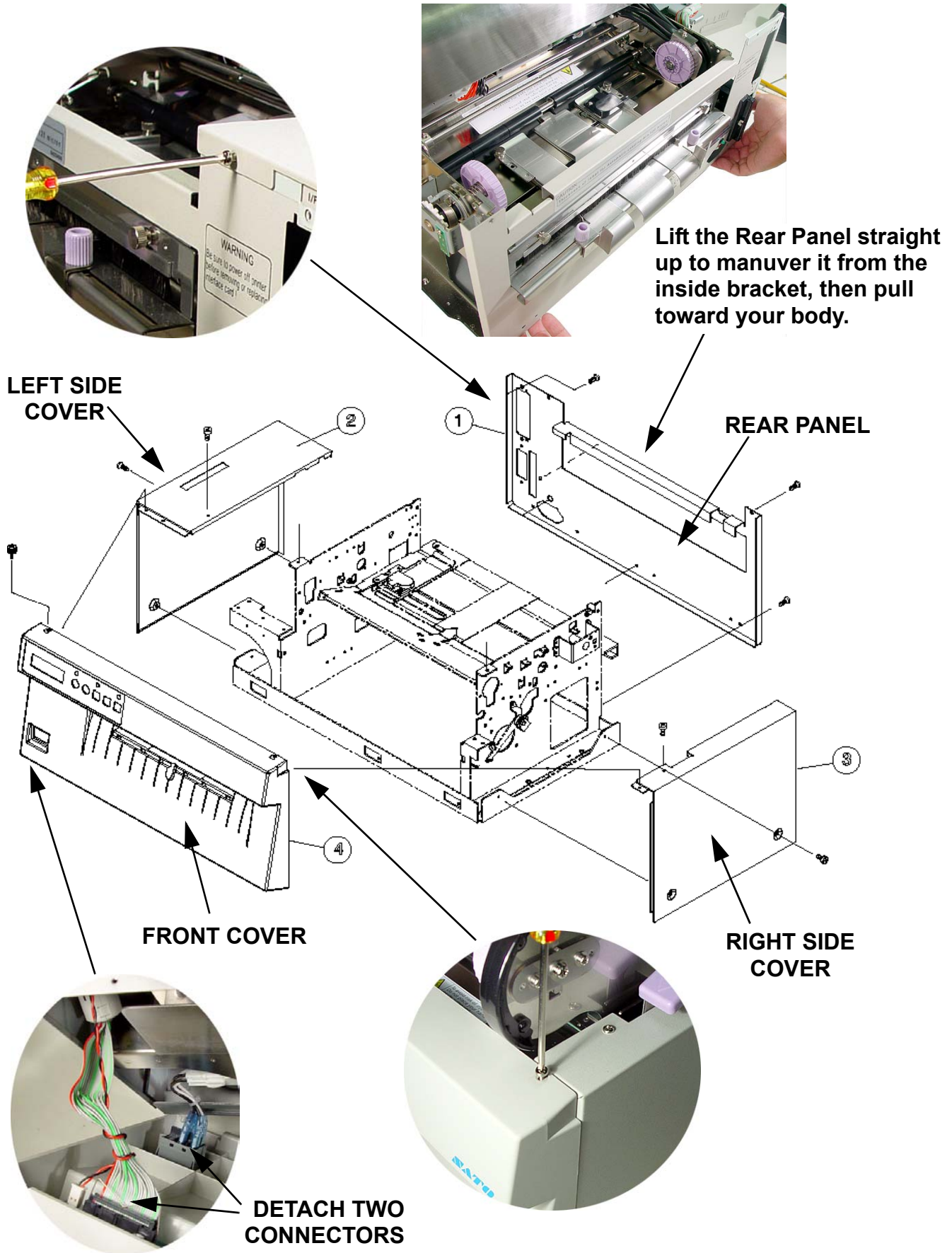
## 6.2 Steps Prior to Some Procedures

Some procedures in this section require access to onents that are not readily accessable without removing the covers of the unit. You will be directed to this section whenever necessary.

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Raise the Access Cover and remove.
3.	Refer to illustrations on page 6-3. <b>Detach the Front Cover.</b> Unfasten (2) screws from the top of front cover. Lift up cover to detach from (3) slots. Detach (2) connectors.
4.	<b>Detach the Right Side and Left Side Covers.</b> Unfasten (5) screws from each side cover and remove.
5.	<b>Detach the Back Panel.</b> Unfasten (3) screws from back panel. Lift the panel straight up to manuver it from the inside bracket, then pull toward your body. Disconnect cable going to the green LED.



## Steps Prior to Some Procedures



## 6.3 Replacing the Print Head TT/DT

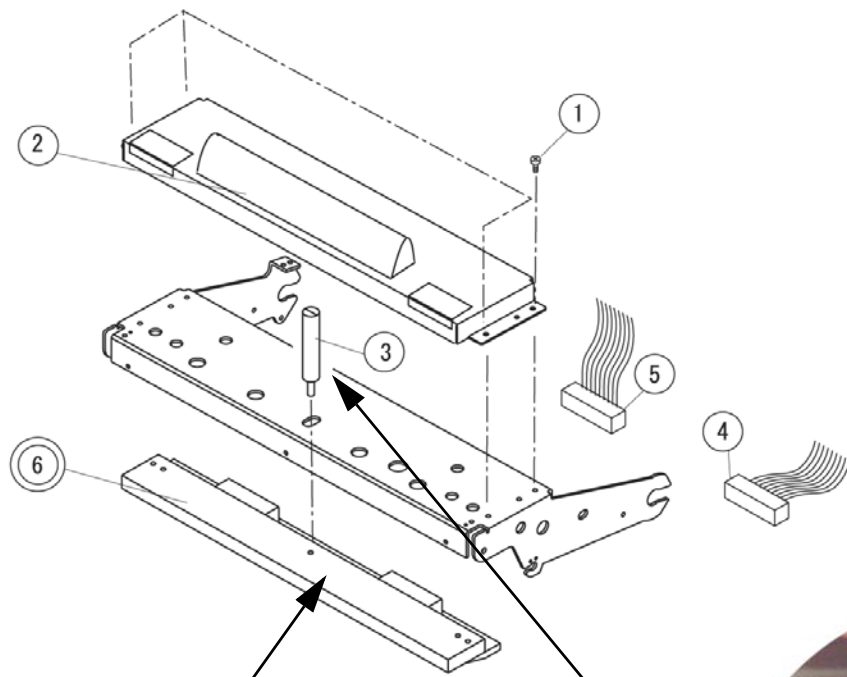
If the print head becomes damaged, it can be easily removed and replaced. No critical adjustments are required. Before you replace the print head, refer to Section 7.3 and clear the head counter.

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Raise the Access Cover
3.	Unload the ribbon and label stock. (NA for ribbon on Direct Thermal units)
4.	Refer to illustrations on page 6-5. Engage the head lock lever to facilitate removal of the print head. Remove the center screw.
5.	For DT - Remove Items 1 and 2.
6.	Remove the center post screw, Item 3.
7.	Carefully open the head latch lever so that the print head will drop down.
8.	Carefully disconnect the cables and remove the print head.
9.	Install a new print head by connecting the cables to the print head. The print head must be positioned so that it aligns properly with the alignment pins.
10.	Close the head latch lever and reinstall the center screw.
11.	For DT - Replace Items 1 and 2.

Before you return the printer to normal service, you should perform the following procedures.

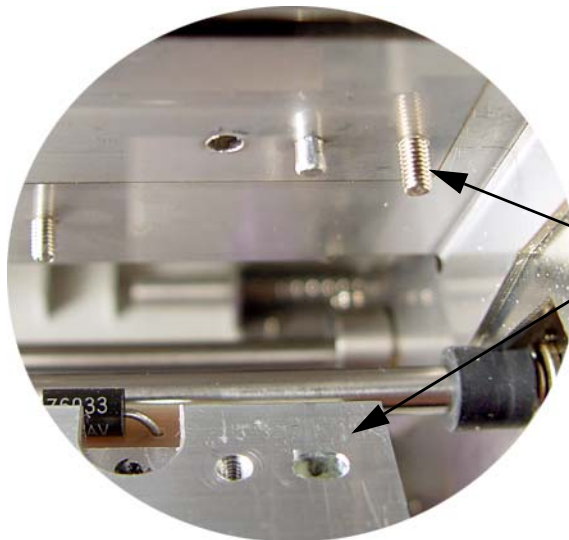
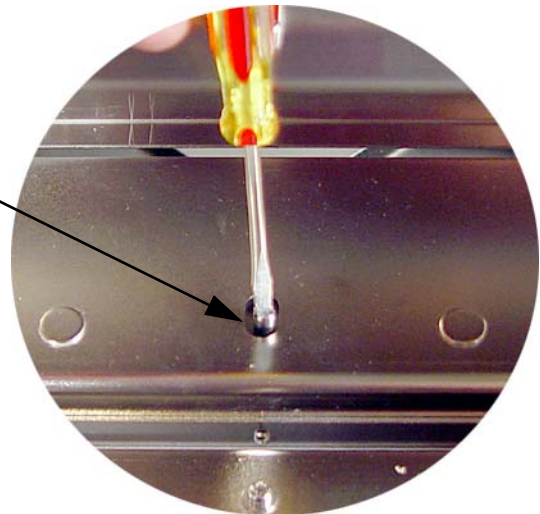
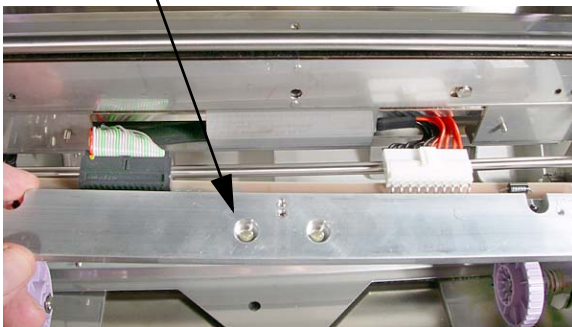
- Clear Counter Heads.
- Confirm that head cables are connected and that they do not touch the head opening spring. Also confirm that you can open and close the head without restriction.

# Replacing the Print Head



PRINT HEAD

REMOVE CENTER  
POST SCREW



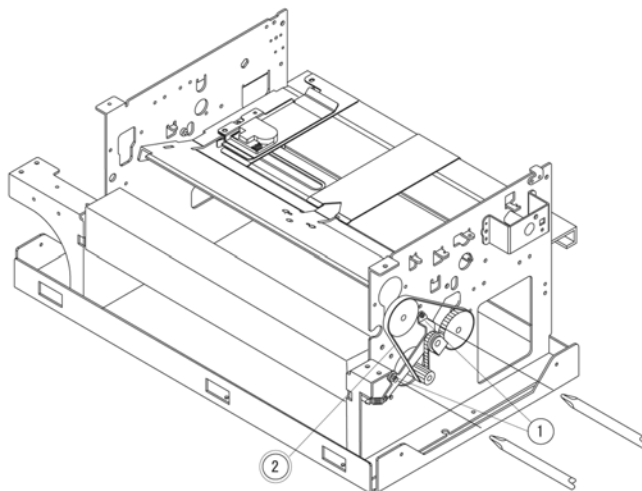
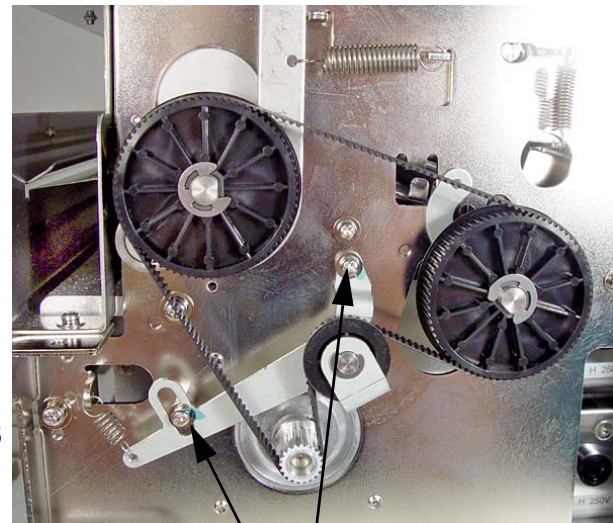
POSITION PRINT HEAD  
WITH ALIGNMENT PINS



## 6.4 Replacing the Timing Belt

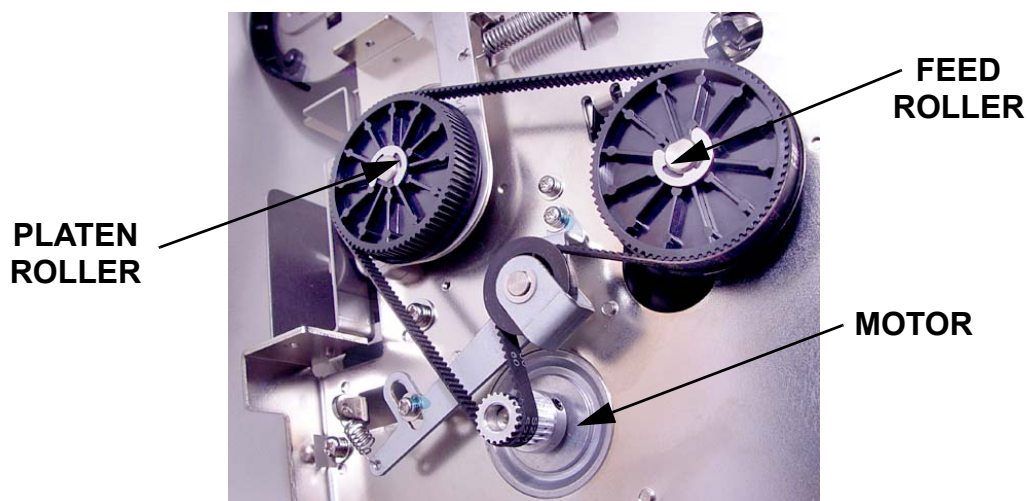
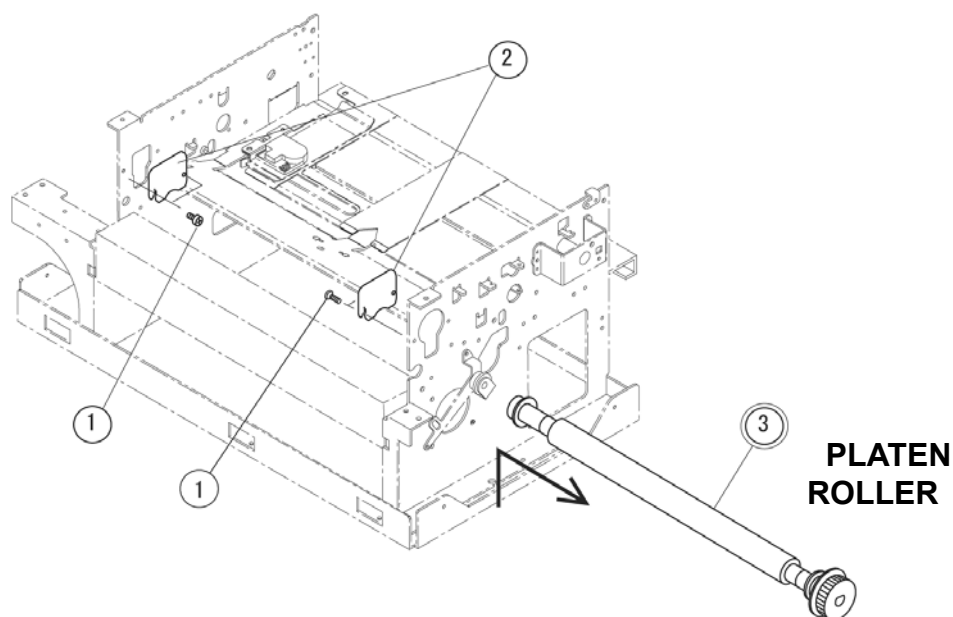
To replace the timing belt, follow perform the following steps.

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Unfasten (5) screws from the right side cover and remove.
3.	Unfasten (2) screws to relieve tension from the belt.
4.	Remove and replace the belt.
5.	Adjust the belt tension as outlined in Section 5.2.
6.	Replace the right side cover.



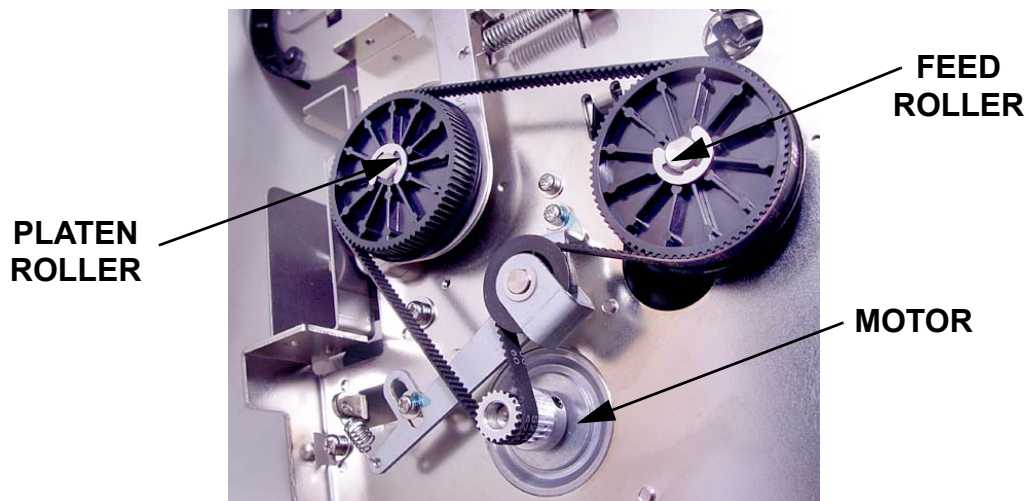
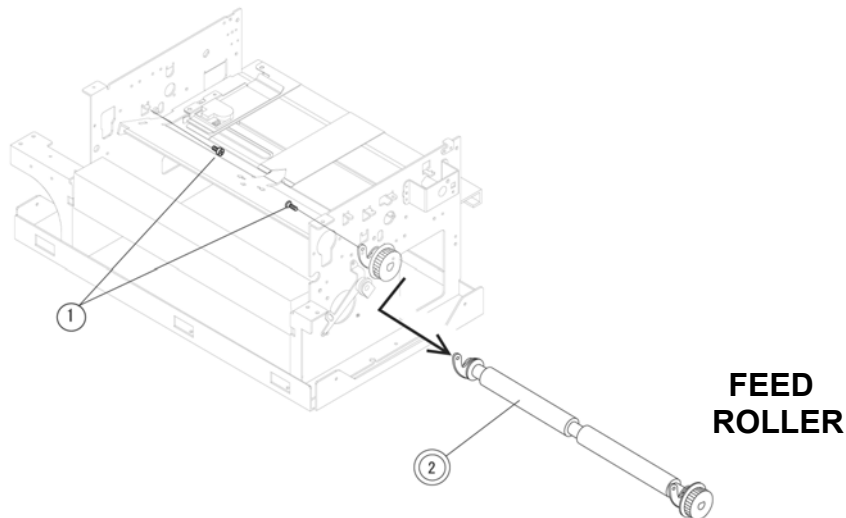
## 6.5 Replacing the Platen Roller

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Refer to Section 6.2 and remove the covers.
3.	Remove Timing Belt per Section 6.4
4.	Unfasten (4) Item 1 screws to detach two Support Clamps Item 2.
5.	Remove and replace Item 3 Platen Roller.
6.	Reattach the Support Clamps.
7.	Replace Timing Belt per Section 6.4
8.	Adjust the belt tension as outlined in Section 5.2.
9.	Replace the covers.



## 6.6 Replacing the Feed Roller

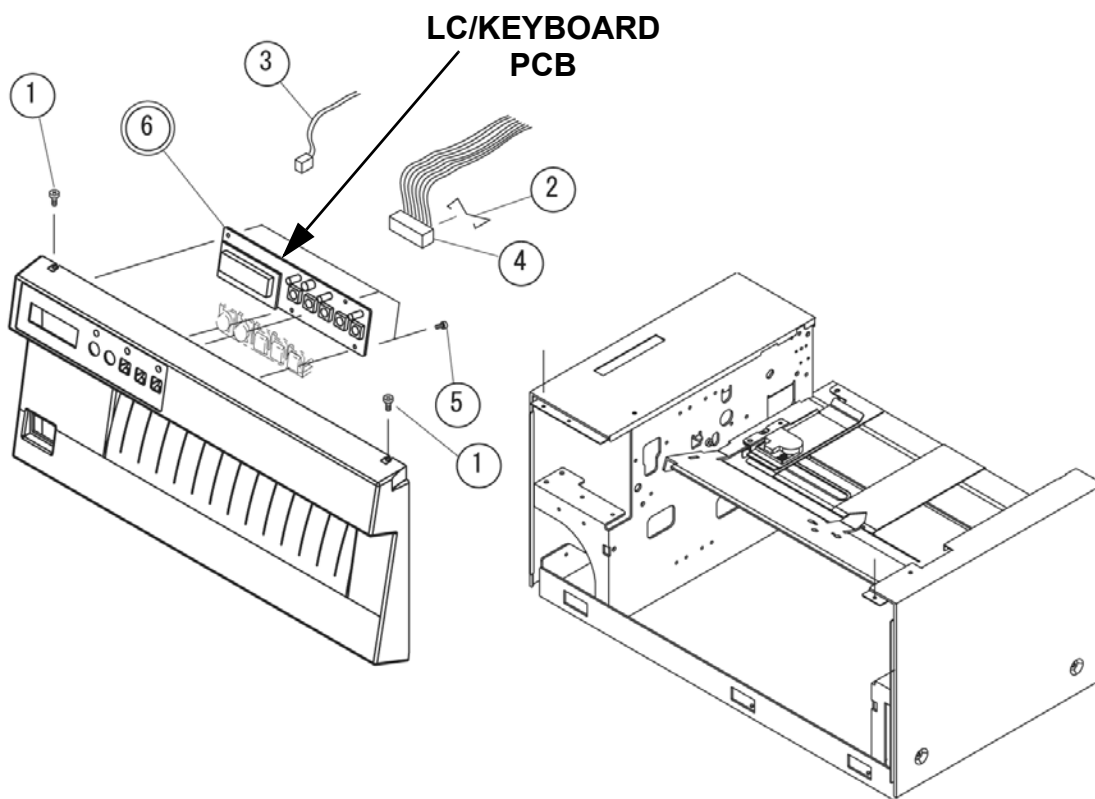
STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Refer to Section 6.2 and remove the covers..
3.	Remove Timing Belt per Section 6.4
4.	Unfasten (2) Item 1 screws
5.	Remove and replace Item 2 Feed Roller.
6.	Replace (2) Item 1 screws.
7.	Replace Timing Belt per Section 6.4
8.	Adjust the belt tension as outlined in Section 5.2.
9.	Replace the covers.





## 6.7 Replacing the LC/Keyboard PCB

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Remove (2) Item 1 screws from top of front cover. Lift up cover to detach it from slots.
3.	Remove Item 2 Connector Lock and detach Item 3 and 4 Connectors.
4.	Remove (4) Item 5 screws and remove Item 6 LC/Keyboard PCB from front cover.
5.	Replace the LC/Keyboard PCB.
6.	Reattach connectors.
7.	Replace the front cover.



REMOVE  
LC/KEYBOARD  
PCB

REMOVE (2)  
SCREWS

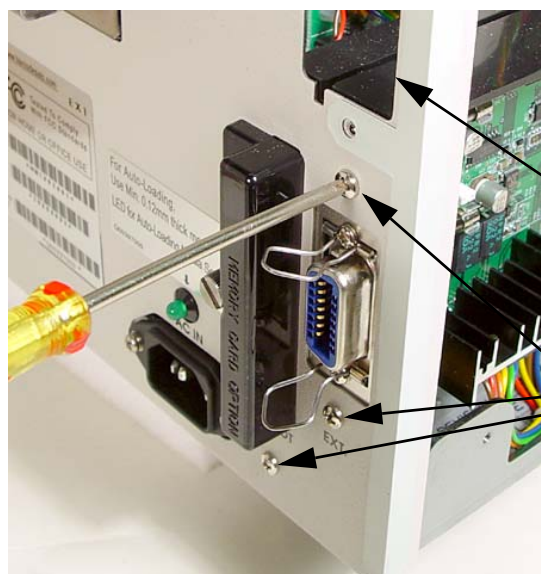


## 6.8 Replacing the Main Circuit Board

The Main Circuit Board contains the control electronics for the printer and is located behind the left side cover. The I/O PCB interface and optional memory card unit if installed, which are attached to the main circuit board, must first be removed.

**NOTE:** Many of the components on this board are susceptible to damage by static electricity. To avoid damage from static discharges, do not unpack new circuit boards from anti-static bags until instructed to do so, and use a wrist grounding strap.

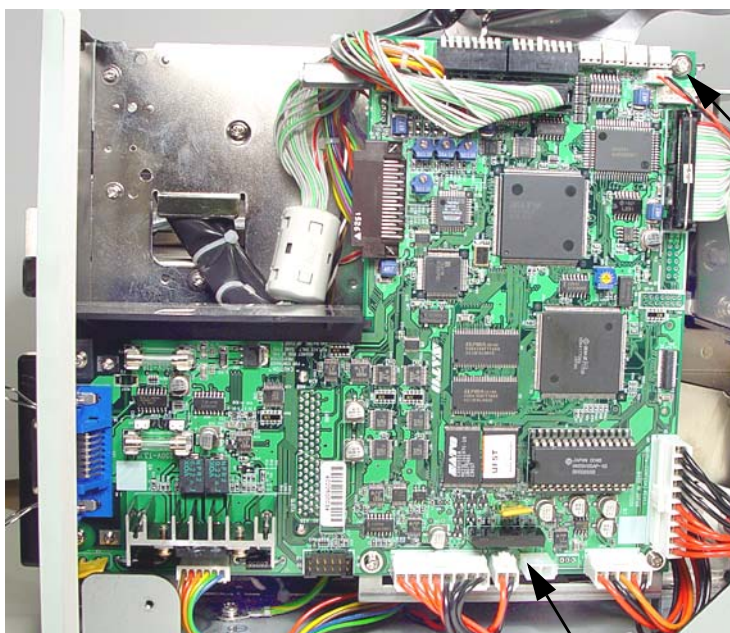
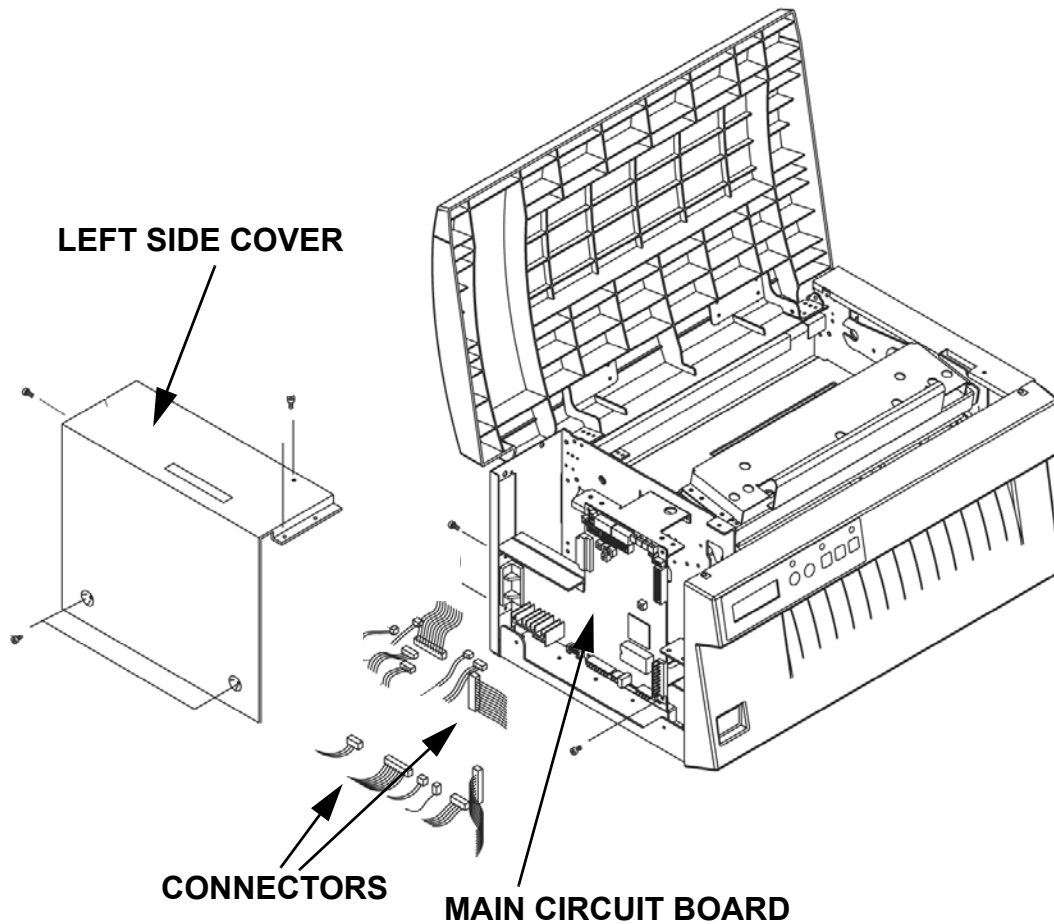
STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Refer to illustrations on pages 6-10 and 6-11. Unfasten (5) screws from the left side cover and remove.
3.	Remove (2) screws holding the I/O PCB interface from the back side of the unit. Pull away to detach the connector on the interface from the main circuit board. Refer to Section 6.9.
4.	Remove (3) screws with washers from the back panel, (2) at EXT connector and (1) under "SLOT".
5.	Note cable connection locations, then carefully disconnect the cables from the main circuit board.
6.	Remove (4) screws with washers from the PCB board to the bracket. Remove and replace the board.
7.	Replace the left side cover.
8.	Complete the Factory Reset Procedure.



**INTERFACE CARD SHOWN  
REMOVED. REFER TO  
SECTION 6.9**

**REMOVE (3) SCREWS, TWO  
AT "EXT" CONNECTOR AND  
ONE UNDER "SLOT"**

## Replacing the Main Circuit Board



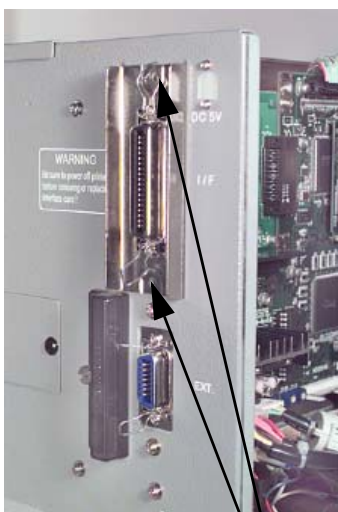
**REMOVE (4) SCREWS  
TO DETACH CIRCUIT  
BOARD FROM  
BRACKET**

**DISCONNECT CABLES  
FROM CIRCUIT BOARD**

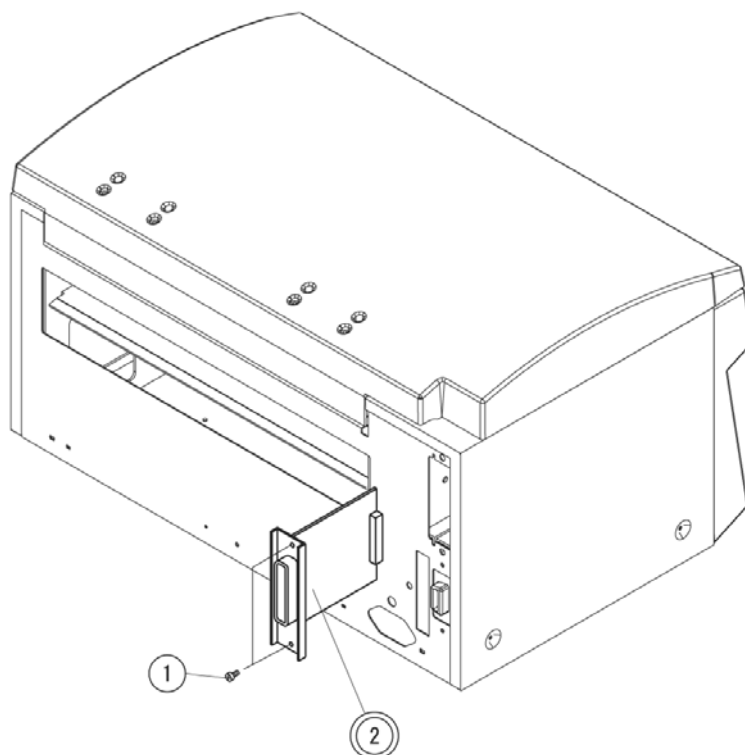
## 6.9 Replacing the Interface PCB

**NOTE:** Many of the components on this board are susceptible to damage by static electricity. To avoid damage from static discharges, do not unpack new circuit boards from anti-static bags until instructed to do so, and use a wrist grounding strap.

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Remove (2) Item 1 screws holding Item 2 Interface PCB from the back side of the unit. Pull away to detach the connector on the interface from the main circuit board.
3.	Replace/substitute optional Interface PCB.
4.	Complete the Factory Reset Procedure.



**REMOVE (2)  
SCREWS AND PULL  
AWAY TO DETACH  
INTERFACE PCB**





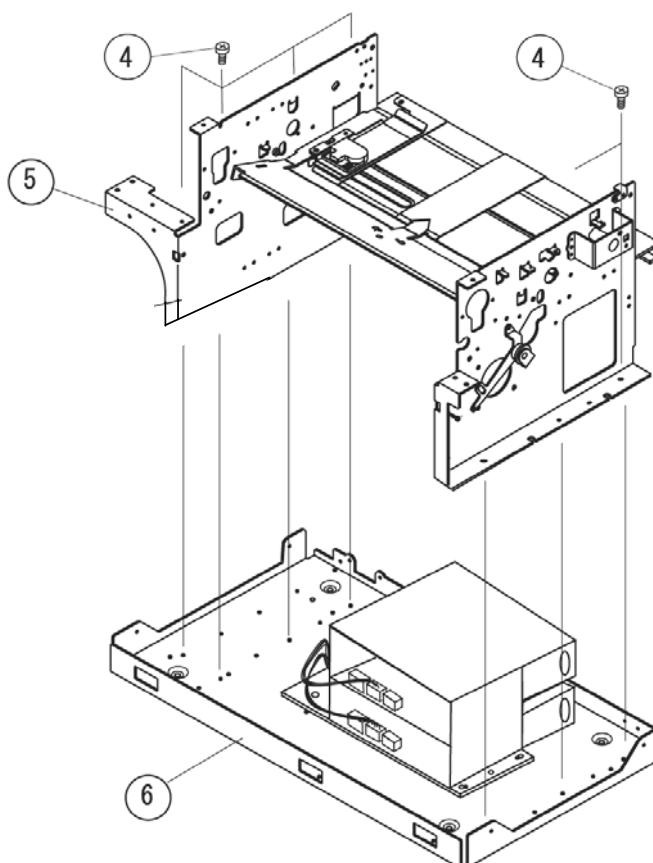
## 6.10 Replacing the Power Supply

The Power Supply is a non-repairable component with no servicable parts and is to be replaced as a complete assembly.

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Refer to Section 6.2 and remove the covers.
3.	Refer to illustrations on pages 6-13 and 6-14. Remove (7) Item 4 screws to detach the main chassis from the base.
4.	Peel back and detach Item 1 Power Supply Cover.
5.	Detach all cable connections to the power supply.
6.	Remove (7) Item 2 screws holding the power supply to the base.
7.	Remove and replace the defective power supply.
8.	Reattach the power supply to the base.
9.	Reattach the cable connections and the Power Supply Cover.
10.	Reattach the base to the main chassis.
11.	Replace the covers.
12.	Check the DC power voltages. Refer to Section 4.3.



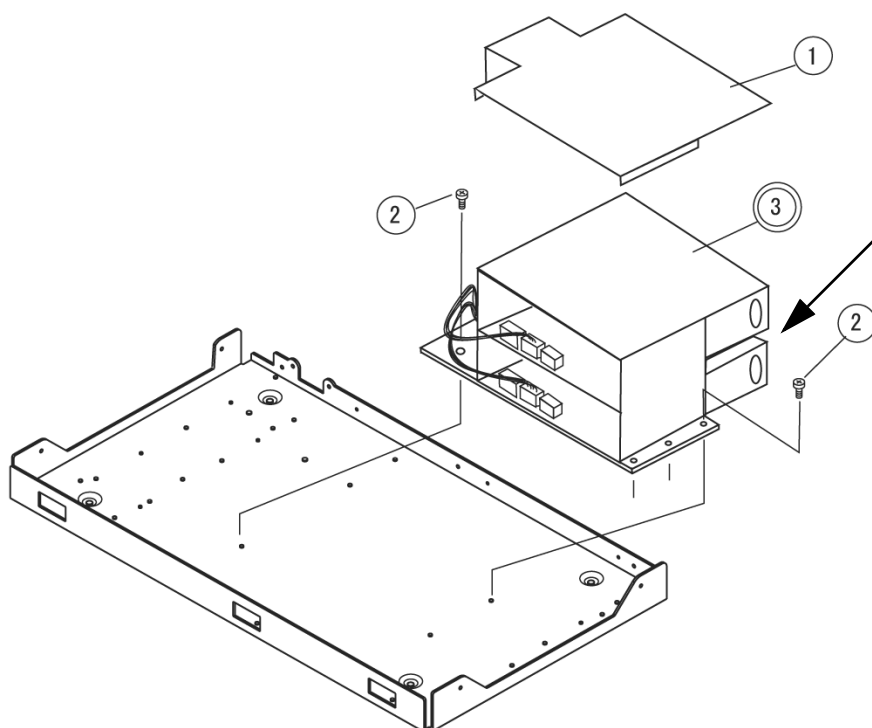
**DETACH THE MAIN CHASSIS  
FROM THE BASE**



## Replacing the Power Supply



**PEEL BACK AND  
REMOVE THE POWER  
SUPPLY COVER**



**REMOVE (7) ITEM 2  
SCREWS HOLDING  
THE POWER SUPPLY  
TO THE BASE**

## 6.11 Replacing the Stepper Motor

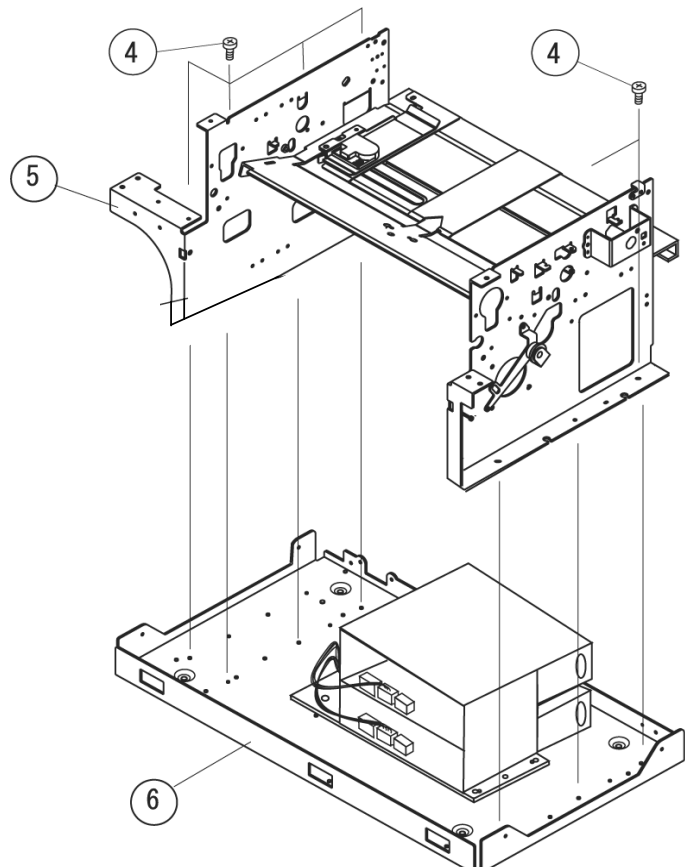
The Stepper Motor is used to transmit motion to the print mechanism for precise print positioning. The stepper motor transmits torque to the label feed roller, the platen roller, the ribbon feed roller, and the ribbon rewind spindle.

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Remove ribbon and label stock if installed.
3.	Refer to Section 6.2 and remove the covers.
4.	Refer to illustrations on pages 6-15 and 6-16. Remove (7) Item 4 screws to detach the main chassis from the base.
5.	Remove (4) Item 1 mounting screws holding the stepper motor to the frame. Detach the motor from the belt.
6.	Unfasten and remove Item 7 screws and Item 8 Pulley from the motor shaft.
7.	Detach the cable connection.
8.	Remove and replace the motor.
9.	Reattach the cable connection.
10.	Reattach the base to the main chassis.
11.	Adjust belt tension as outlined in Section 5.2
12.	Replace the covers.

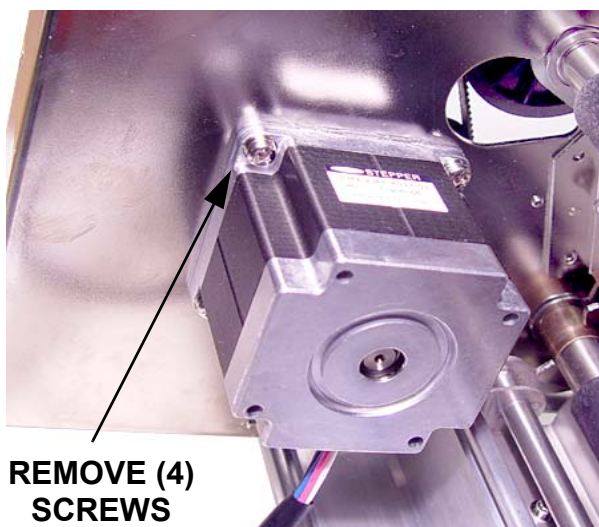


**STEPPER  
MOTOR**

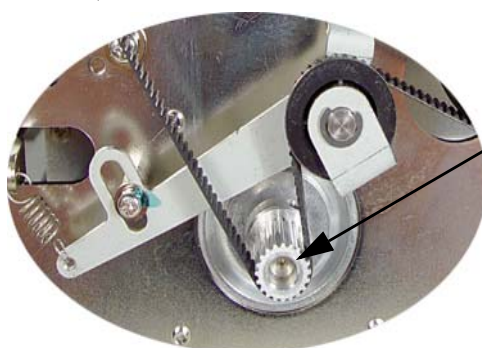
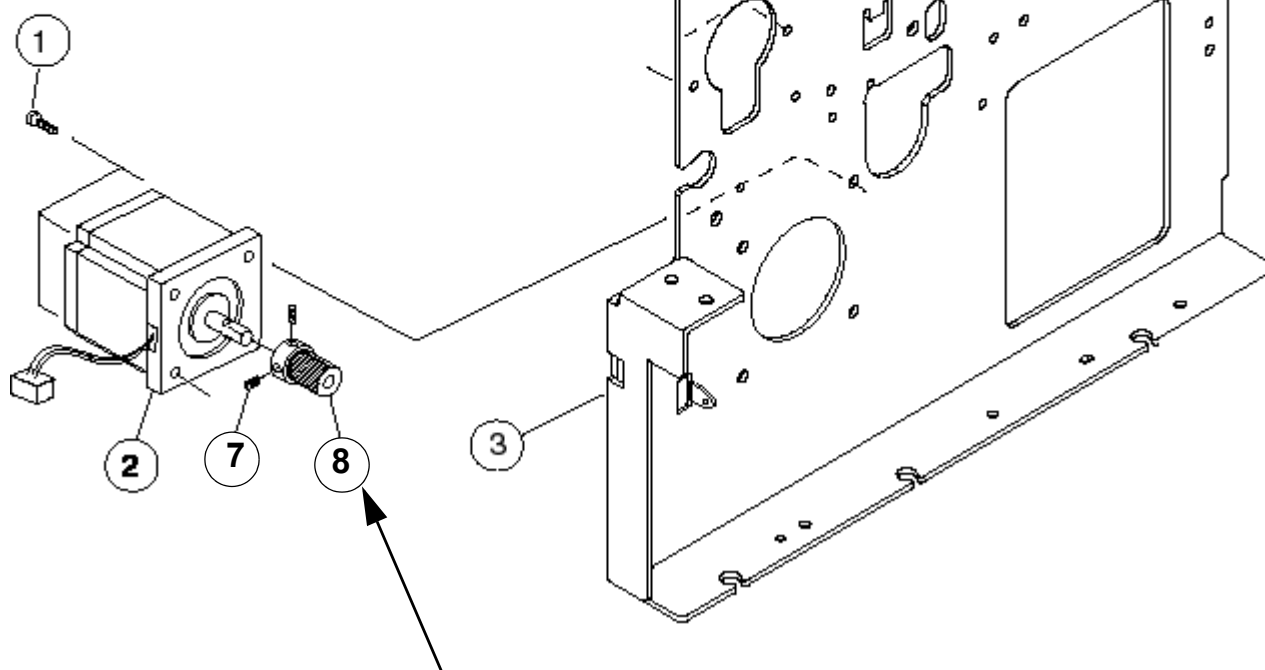
**DETACH THE  
MAIN CHASSIS  
FROM THE BASE**



## Replacing the Stepper Motor



**REMOVE (4)  
SCREWS**

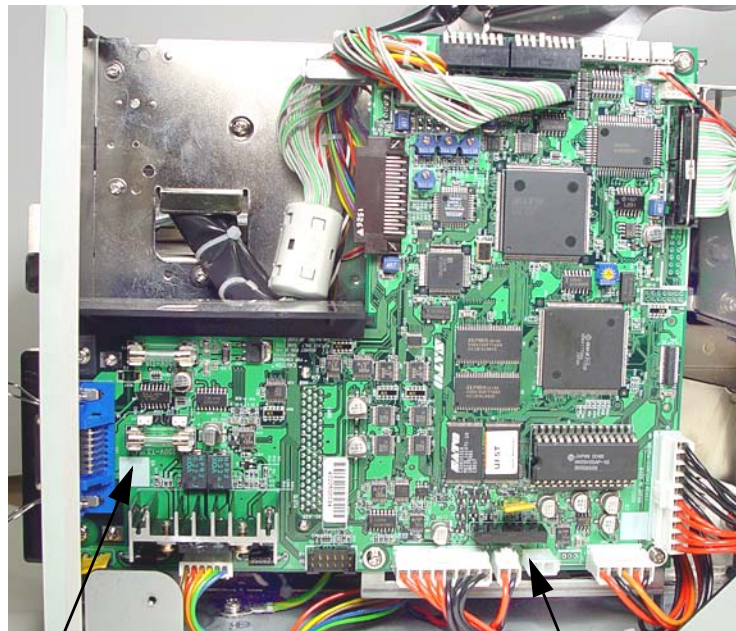


**DETACH PULLEY  
FROM MOTOR SHAFT**

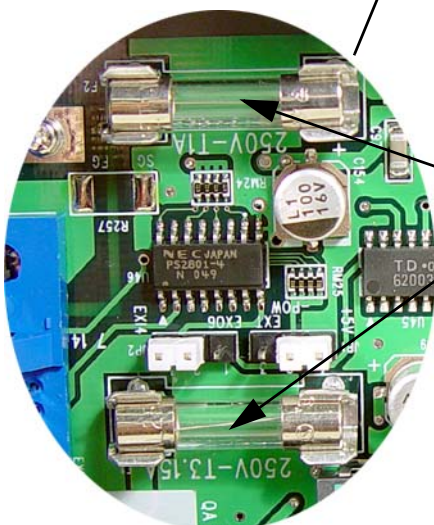


## 6.12a Replacing the Fuse(s) (On PCB)

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Unfasten (5) screws from the left side cover and remove.
3.	Remove and replace the fuse(s) with one of equal rating. <b>Do not use a fuse of higher rating.</b>
4.	Replace the left side cover.
5.	Complete the Factory Reset Procedure.



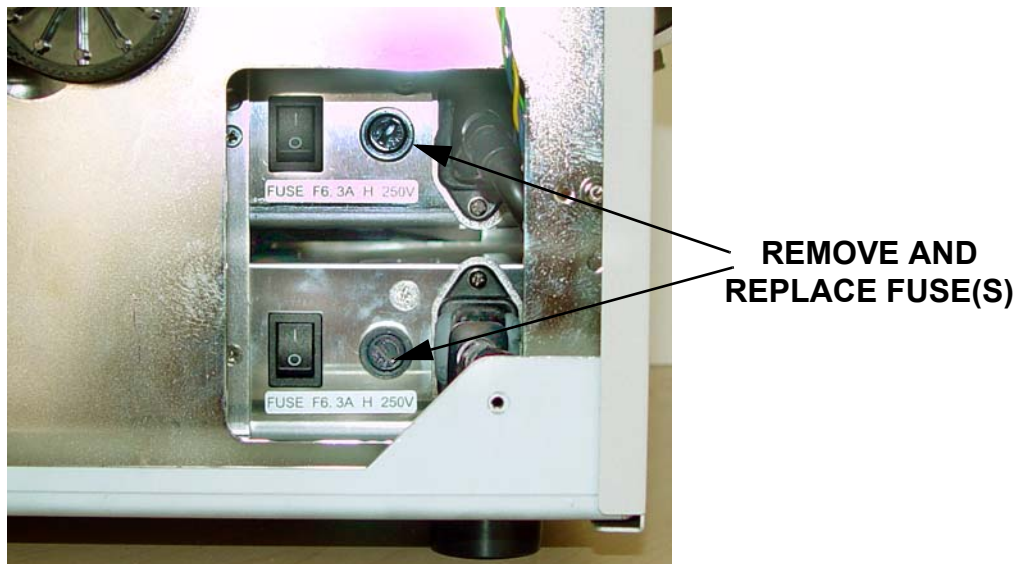
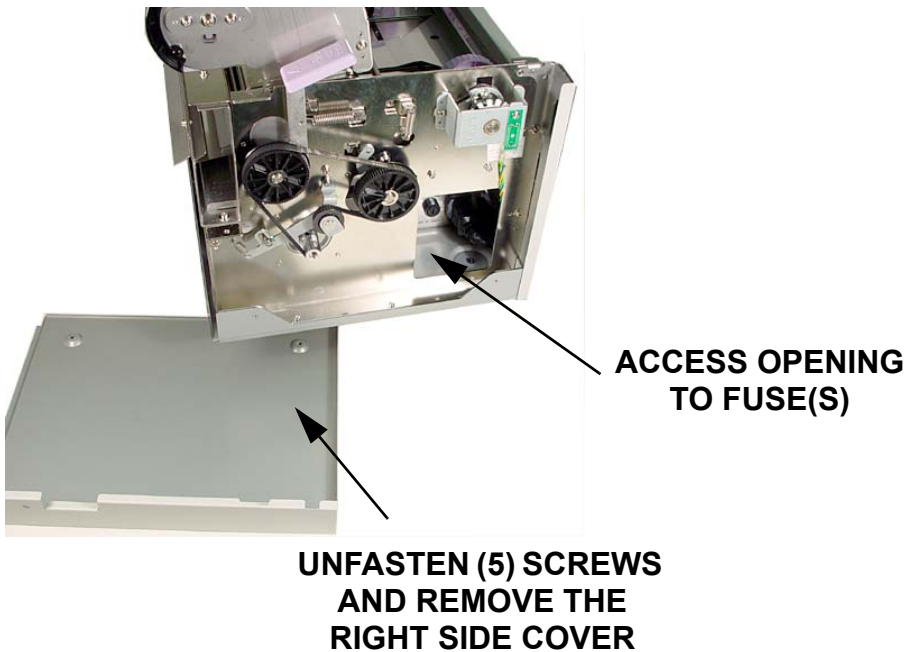
MAIN CIRCUIT BOARD



REMOVE AND  
REPLACE FUSE(S)

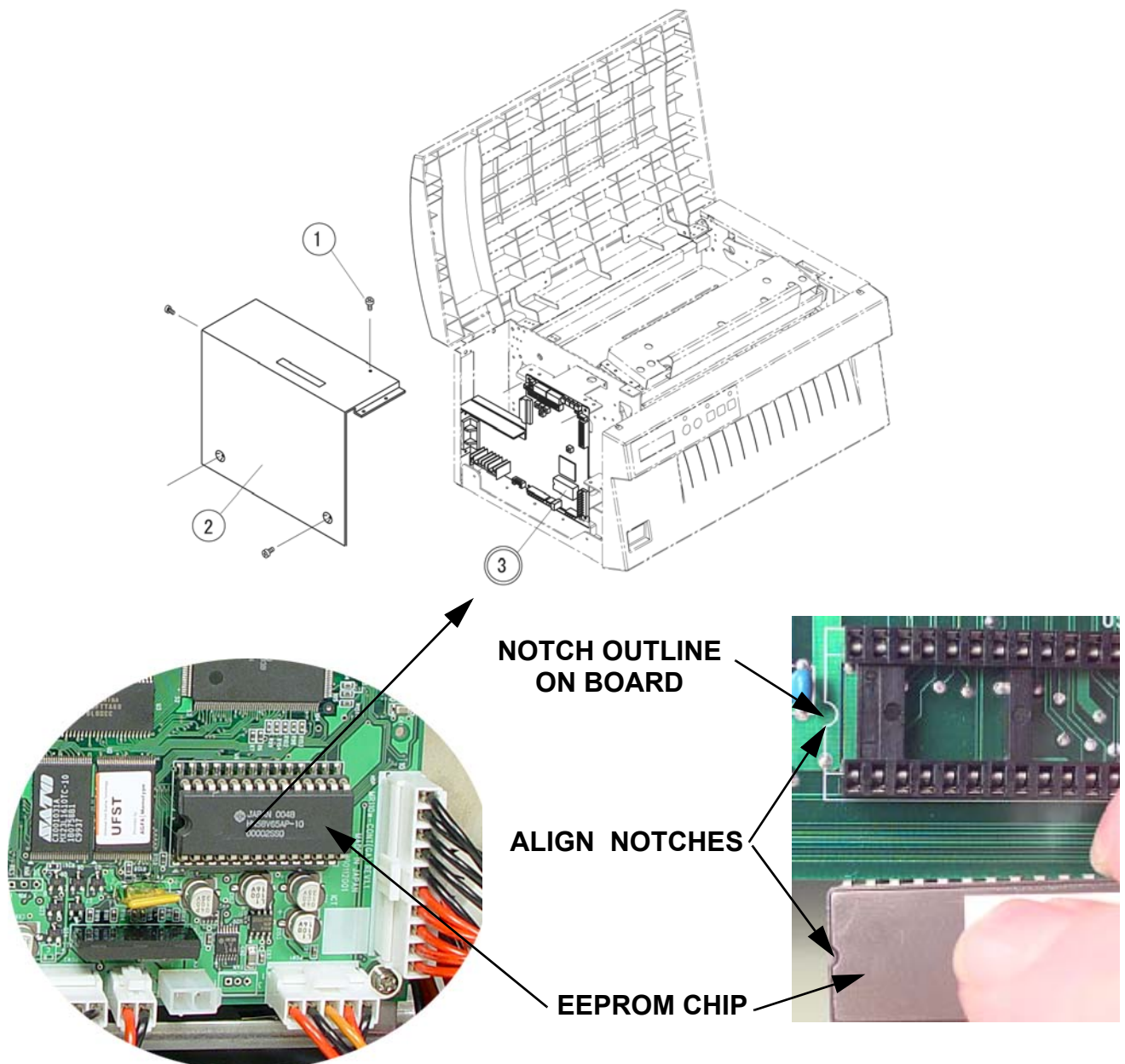
## 6.12b Replacing the Fuse(s)

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Unfasten (5) screws from the right side cover and remove.
3.	Remove and replace the fuse(s) with one of equal rating. <b>Do not use a fuse of higher rating.</b>
4.	Replace the right side cover.
5.	Complete the Factory Reset Procedure.



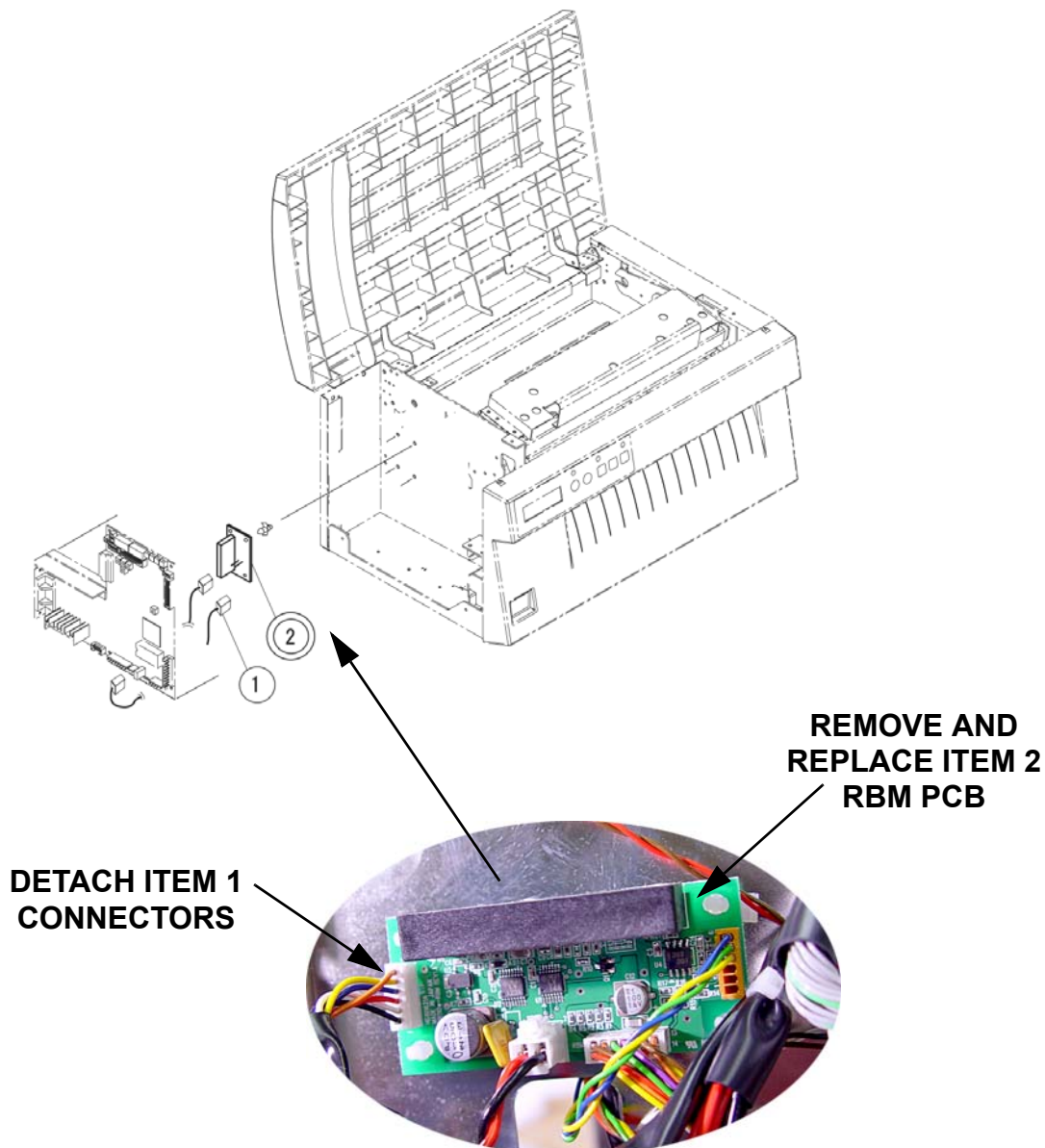
## 6.13 Replacing the EEPROM

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Unfasten (5) screws from the left side cover and remove.
3.	Remove the Item 3 EEPROM chip at location shown in illustration below.
4.	Install the new EEPROM chip being careful to properly align the chip, using the “U” shaped notch as a reference. Be careful not to bend any of the EEPROM legs and that it is set securely in the socket.
5.	Replace the left side cover.
6.	Complete the Factory Reset Procedure.



## 6.14 Replacing the Ribbon PCB

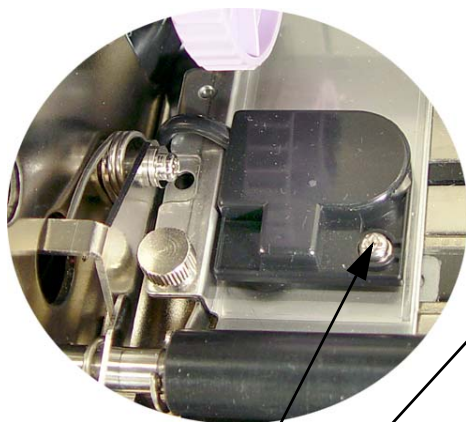
STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Refer to Section 6.9 and remove the Interface PCB if installed.
3.	Refer to Section 6.8 and remove the Main Circuit Board.
4.	Detach the Item 1 Connectors.
5.	Remove and replace Item 2 RBM PCB set.
6.	Replace the Main Circuit Board.
7.	Replace the left side cover.
8.	Complete the Factory Reset Procedure.



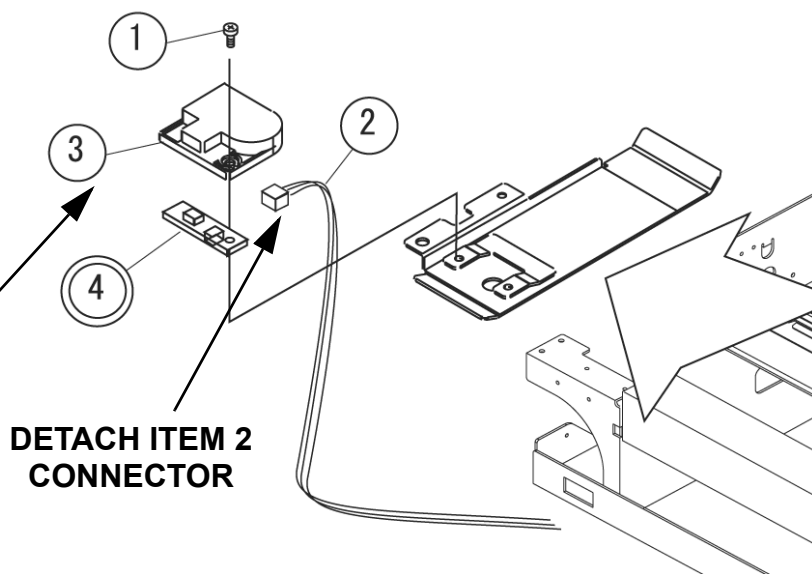


## 6.15a Replacing the Pitch Sensor (SEN2 PCB) (Gap Sensor)

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Raise the Access Cover.
3.	Unload the ribbon and label stock. (NA for ribbon on Direct Thermal units).
4.	Remove (1) Item 1 screw to detach Item 3 Sensor Cover from SEN2 PCB.
5.	Detach (1) Item 2 connector from Item 4 SEN2 PCB.
6.	Remove and replace SEN2 PCB.
7.	Replace the Sensor Cover.
8.	Refer to Section 4.6 "Adjustment of Gap Sensor".



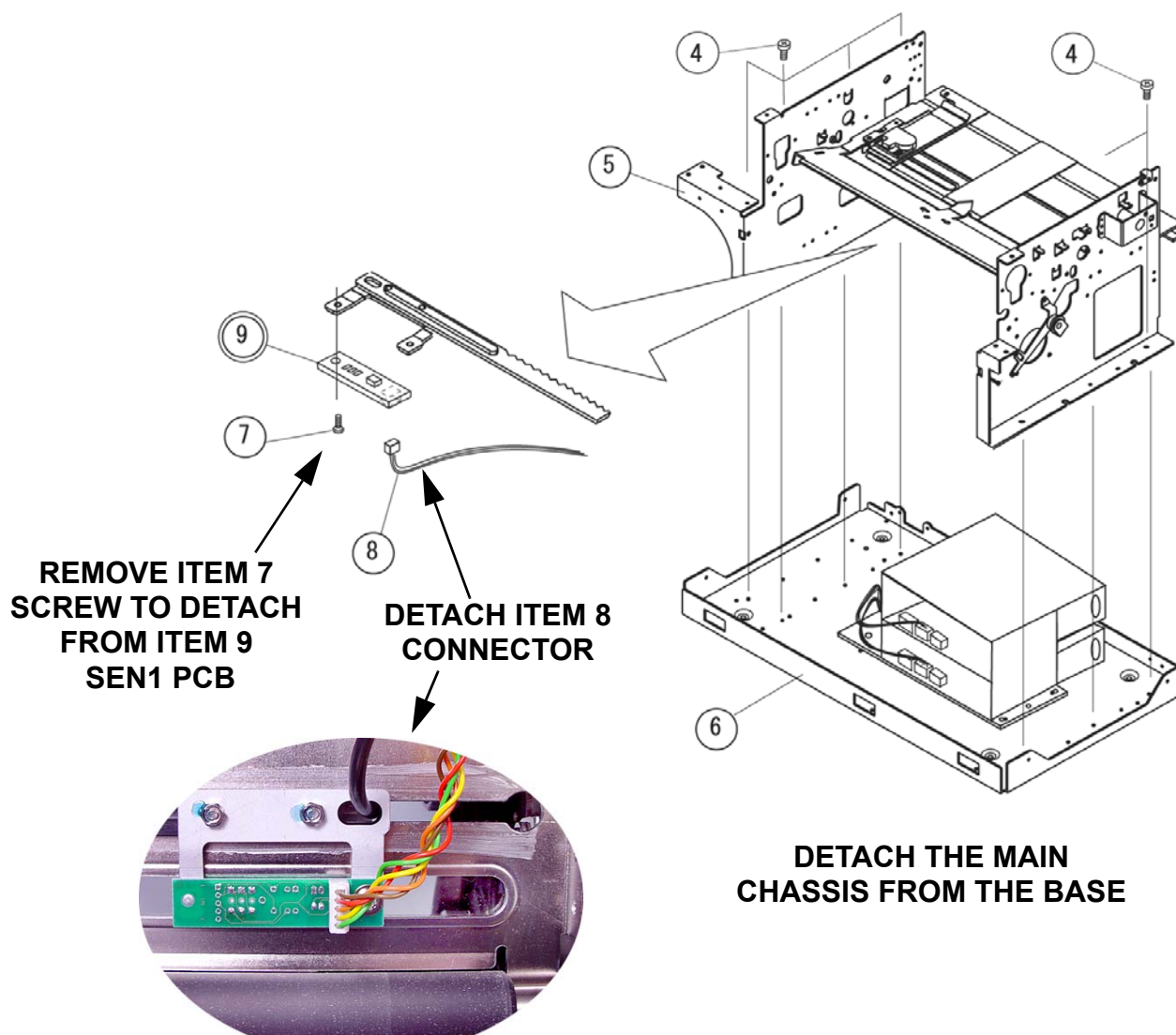
**REMOVE ITEM 1  
SCREW TO DETACH  
ITEM 3 SENSOR  
COVER FROM ITEM 4  
SEN2 PCB**



**DETACH ITEM 2  
CONNECTOR**

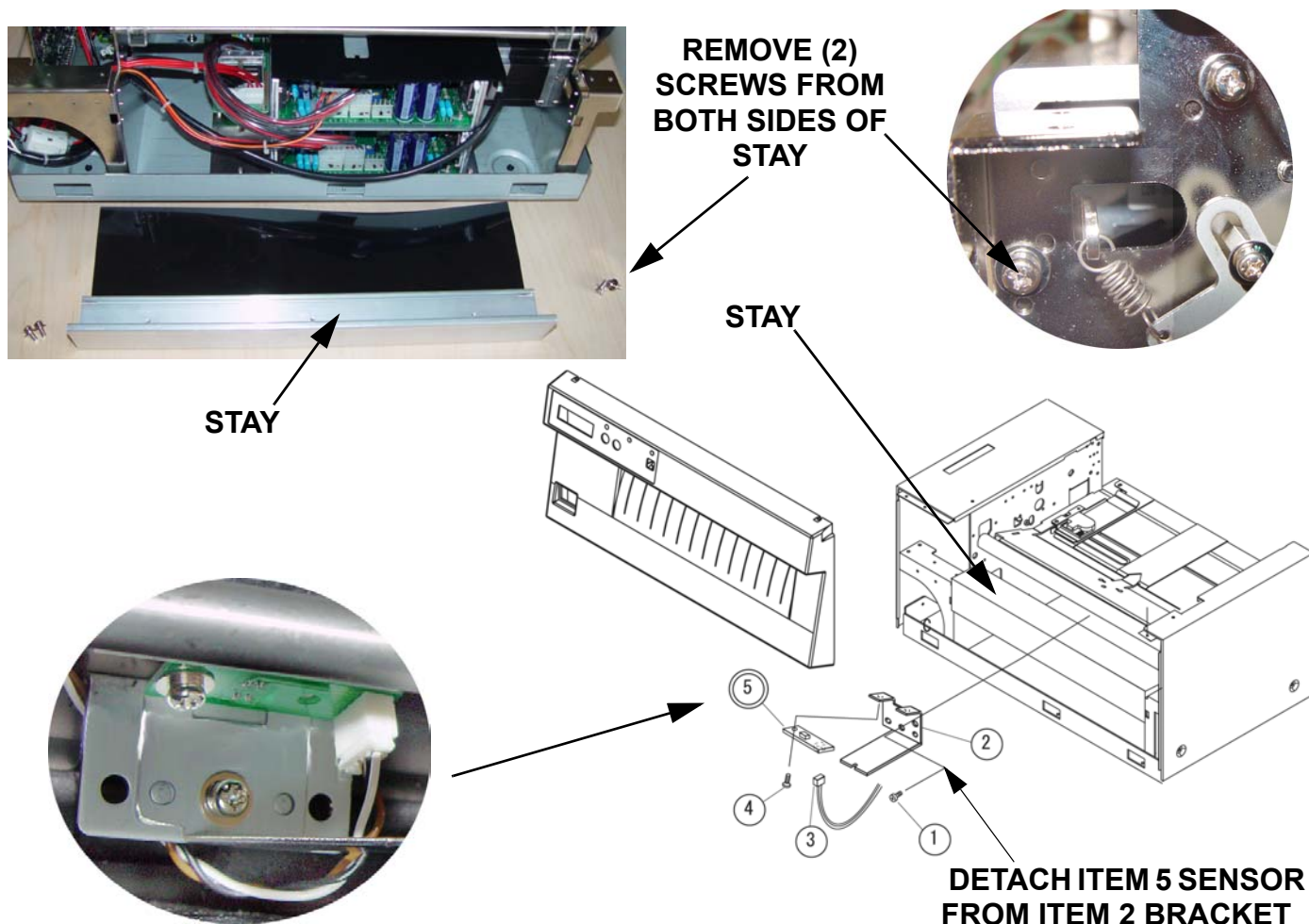
## 6.15b Replacing the Pitch Sensor (SEN1 PCB) (Eye-Mark Sensor)

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Refer to Section 6.9 and remove the Interface PCB if installed.
3.	Refer to Section 6.2 and remove the covers.
4.	Remove (7) Item 4 screws to detach the main chassis from the base.
5.	Detach (1) Item 8 connector from Item 9 SEN1 PCB.
6.	Remove (1) Item 7 screw to detach SEN1 PCB from the plate rack.
7.	Remove and replace SEN1 PCB.
8.	Reattach the base to the main chassis.
9.	Replace the covers.
10.	Refer to Section 4.5 "Adjustment of Eyemark Sensor".



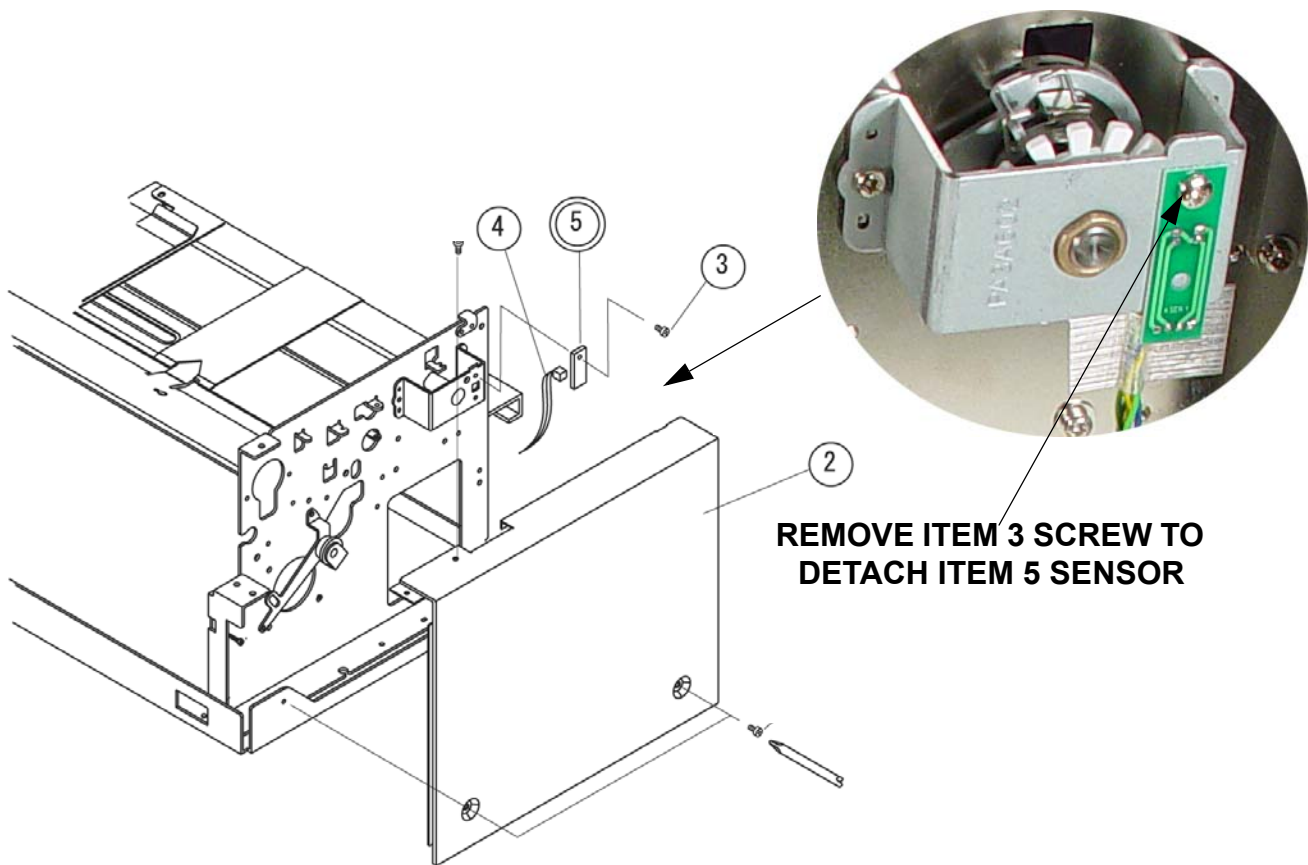
## 6.16 Replacing the Label Penetrating Sensor (SEN3 PCB)

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Remove the Front Cover. Refer to Section 6.7 Replacing the LC/Keyboard PCB.
3.	Remove the Cutter or Tear-off cutter. Refer to Section 6.18 Replacing the Cutter Unit.
4.	Remove (2) screws from both sides of Stay. Detach the Stay.
5.	Detach the Item 3 connector.
6.	Remove (1) Item 1 screw from Item 2 Sensor Bracket.
7.	Remove (1) Item 4 screw to detach Item 5 Sensor from Item 2 Sensor bracket.
8.	Remove and replace the sensor.
9.	Reattach Item 3 connector.
10.	Replace the Stay.
11.	Replace the Cutter.
12.	Replace the front cover.
13.	Refer to Section 4.7 "Adjustment of Label Penetrating Sensor".



## 6.17 Replacing the Ribbon Sensor (CSEN PCB) TT Unit

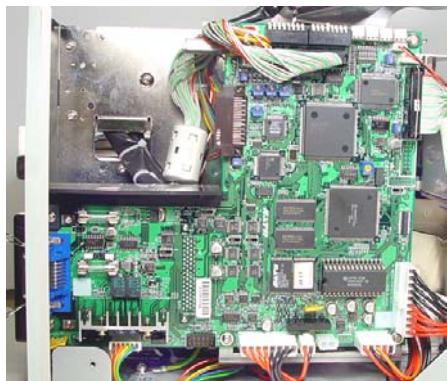
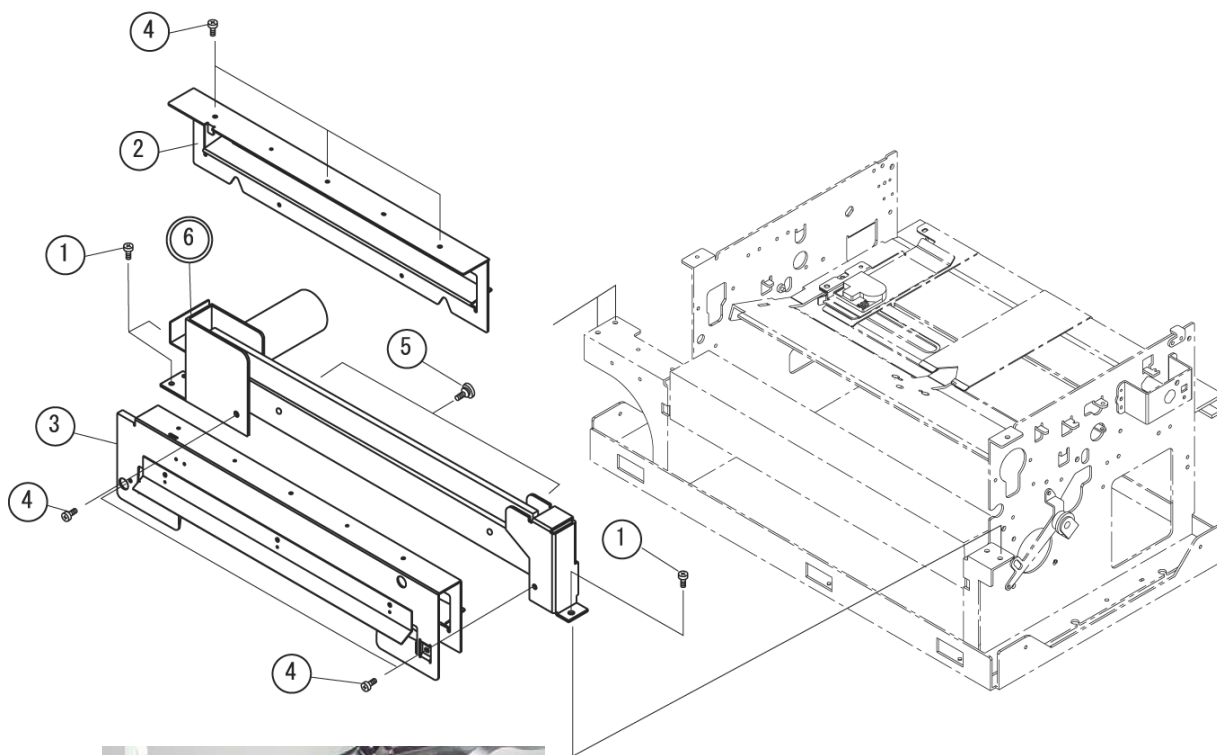
STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Unfasten (5) screws from the left side cover and remove.
3.	Remove (1) Item 3 screw to detach Item 5 Sensor.
4.	Detach Item 4 connector.
5.	Remove and replace the sensor.
6.	Reattach Item 4 connector.
7.	Replace the left side cover.
8.	Refer to Section 4.13 "Checking the Ribbon Sensor".





## 6.18 Replacing the Cutter Unit

STEP	PROCEDURE
1.	Switch the printer OFF and disconnect the power cord.
2.	Refer to Section 6.2 and remove the covers.
3.	Detach the CUTSEN/CUTTER connector from the main circuit board.
4.	Remove (3) Item 1 screws from Item 6 Cutter Unit.
5.	Remove (3) Item 4 screws from Item 2 Cutter Bracket.
6.	Remove (4) Item 4 screws from Item 3 Cutter Bracket
7.	Remove (2) Item 5 Guide screws from Item 6 Cutter Unit
8.	Remove and replace the Cutter Unit.
9.	Reattach the cable CUTSEN/CUTTER connection to the main circuit board.
10.	Replace the covers.



**DETACH THE CUTSEN/  
CUTTER CONNECTOR  
ON THE MAIN CIRCUIT  
BOARD**

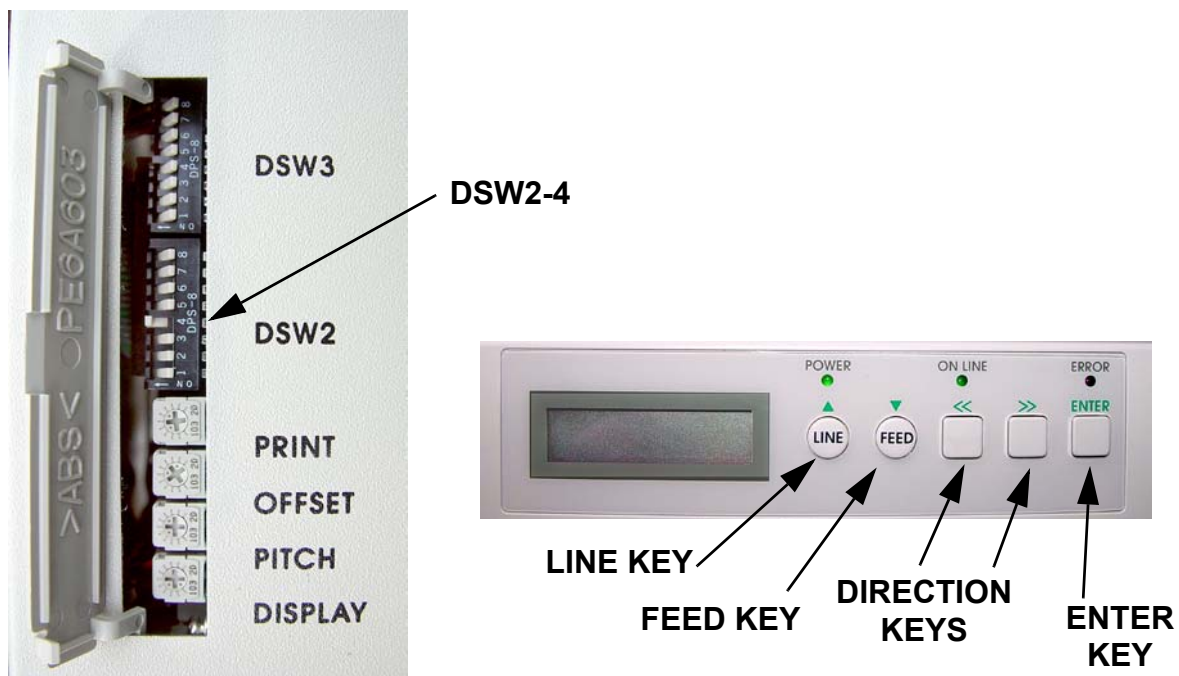


## Factory Resets

### 7.1 Overview

The Factory Reset Mode allows you to:




- *Factory Settings/Test Print*
- *Clear Head Counters*
- *Clear Cutter Counter*
- *Clear EEPROM*



## 7.2 Factory Settings/Test Print

To reset the printer to the factory settings, perform the following steps.




**CAUTION:** Resetting the printer will clear the registers.

STEP	PROCEDURE
1.	Refer to illustrations on page 7-1. Record all current dip switch positions, then place all switches in the <b>OFF</b> position.
2.	Place the <b>DSW2-4</b> in the <b>ON</b> position.
3.	Press the <b>LINE</b> and <b>FEED</b> keys simultaneously while turning on the power. Release the keys when the printer beeps. The following screen will appear.
	<div> MAINTENANCE MODE  DIPSW2-4 ON&gt;OFF </div>
4.	Place the <b>DSW2-4</b> in the <b>OFF</b> position and the following screen will appear.
	<div> FACTORY MODE </div>
5.	Press the <b>ENTER</b> key to display the next screen.
	<div> COUNTER MODE  NONE </div>
6.	Press the  key <b>once</b> to change the message for <b>NONE</b> to <b>ALL</b>
	<div> COUNTER CLEAR  ALL </div>
7.	Press the <b>ENTER</b> . After a pause the next screen is displayed.
	<div> PRINT SIZE  SMALL LARGE </div>
8.	Select the print size by pressing the   keys. The default is <b>LARGE</b> . Start the test print by pressing <b>ENTER</b> .
9.	Press the <b>ENTER</b> to stop the printing and <b>ENTER</b> again to resume. Warning: This test activates all the heating elements on the print head and therefore should be used only for testing purposes with full width labels to avoid damaging the print head.
10.	Verify that the counters on the test print have reset to 0.0 km.
11.	Power <b>OFF</b> the printer and confirm the switches are in the <b>OFF</b> position.

## 7.3 Clear Head Counters

To reset the printer to the factory settings, perform the following steps.




**CAUTION:** Resetting the printer will clear the registers.

STEP	PROCEDURE
1.	Refer to illustrations on page 7-1. Record all current dip switch positions, then place all switches in the <b>OFF</b> position.
2.	Place the <b>DSW2-4</b> in the <b>ON</b> position.
3.	Press the <b>LINE</b> and <b>FEED</b> keys simultaneously while turning on the power. Release the keys when the printer beeps. The following screen will appear. <div data-bbox="1062 575 1521 701" data-label="Text"> <pre>MAINTENANCE MODE DIPSW2-4 ON&gt;OFF</pre> </div>
4.	Place the <b>DSW2-4</b> in the <b>OFF</b> position and the following screen will appear. <div data-bbox="1062 785 1521 911" data-label="Text"> <pre>FACTORY MODE</pre> </div>
5.	Press the <b>ENTER</b> key to display the next screen. <div data-bbox="1062 963 1521 1089" data-label="Text"> <pre>COUNTER MODE NONE</pre> </div>
6.	Press the  key <b>twice</b> to change the message for <b>NONE</b> to <b>HEAD</b> <div data-bbox="1062 1163 1521 1289" data-label="Text"> <pre>COUNTER CLEAR HEAD</pre> </div>
7.	Press the <b>ENTER</b> . After a pause the next screen is displayed. <div data-bbox="1062 1344 1521 1470" data-label="Text"> <pre>PRINT SIZE SMALL LARGE</pre> </div>
8.	Select the print size by pressing the   keys. The default is <b>LARGE</b> . Start the test print by pressing <b>ENTER</b> .
9.	Press the <b>ENTER</b> to stop the printing and <b>ENTER</b> again to resume. Warning: This test activates all the heating elements on the print head and therefore should be used only for testing purposes with full width labels to avoid damaging the print head.
10.	Verify that the counters on the test print have reset to 0.0 km.
11.	Power <b>OFF</b> the printer and confirm the switches are in the <b>OFF</b> position.

## 7.4 Clear Cutter Counters

To reset the printer to the factory settings, perform the following steps.




**CAUTION: Resetting the printer will clear the registers.**

STEP	PROCEDURE
1.	Refer to illustrations on page 7-1. Record all current dip switch positions, then place all switches in the <b>OFF</b> position.
2.	Place the <b>DSW2-4</b> in the <b>ON</b> position.
3.	Press the <b>LINE</b> and <b>FEED</b> keys simultaneously while turning on the power. Release the keys when the printer beeps. The following screen will appear. <div data-bbox="987 577 1442 709" data-label="Text"> <pre>MAINTENANCE MODE DIPSW2-4 ON&gt;OFF</pre> </div>
4.	Place the <b>DSW2-4</b> in the <b>OFF</b> position and the following screen will appear. <div data-bbox="997 787 1446 913" data-label="Text"> <pre>FACTORY MODE</pre> </div>
5.	Press the <b>ENTER</b> key to display the next screen. <div data-bbox="997 966 1446 1094" data-label="Text"> <pre>COUNTER MODE NONE</pre> </div>
6.	Press the  key <b>three</b> times to change the message for <b>NONE</b> to <b>CUT</b> . <div data-bbox="997 1165 1446 1293" data-label="Text"> <pre>COUNTER CLEAR CUT</pre> </div>
7.	Press the <b>ENTER</b> . After a pause the next screen is displayed. <div data-bbox="997 1348 1446 1476" data-label="Text"> <pre>PRINT SIZE SMALL LARGE</pre> </div>
8.	Select the print size by pressing the   keys. The default is <b>LARGE</b> . Start the test print by pressing <b>ENTER</b> .
9.	Press the <b>ENTER</b> to stop the printing and <b>ENTER</b> again to resume. Warning: This test activates all the heating elements on the print head and therefore should be used only for testing purposes with full width labels to avoid damaging the print head.
10.	Verify that the counters on the test print have reset to 0.0 km.
11.	Power <b>OFF</b> the printer and confirm the switches are in the <b>OFF</b> position.

## 7.5 Clear EEPROM

To reset the printer to the factory settings, perform the following steps.

**CAUTION: Resetting the printer will clear the registers.**

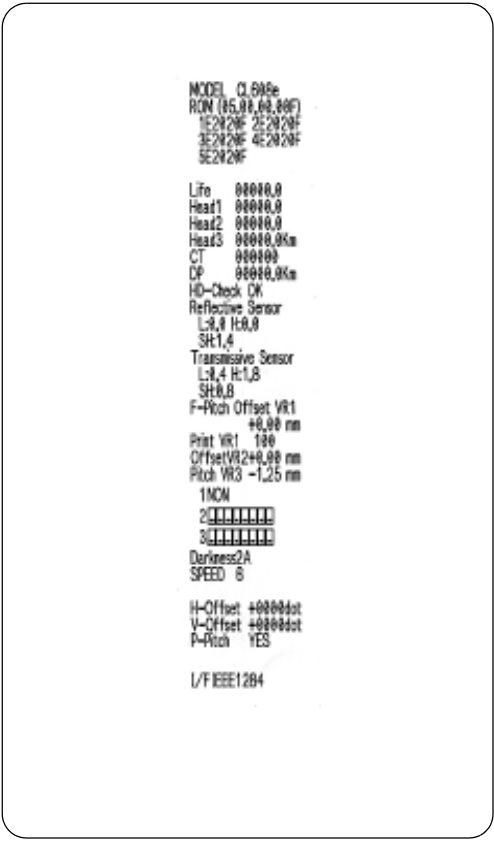
STEP	PROCEDURE
1.	Refer to illustrations on page 7-1. Record all current dip switch positions, then place all switches in the <b>OFF</b> position.
2.	Place the <b>DSW2-4</b> in the <b>ON</b> position.
3.	Press the <b>LINE</b> and <b>FEED</b> keys simultaneously while turning on the power. Release the keys when the printer beeps. The following screen will appear. <div data-bbox="1071 627 1521 758" data-label="Text"> <pre>MAINTENANCE MODE DIPSW2-4 ON&gt;OFF</pre> </div>
4.	Place the <b>DSW2-4</b> in the <b>OFF</b> position and the following screen will appear. <div data-bbox="1071 837 1521 968" data-label="Text"> <pre>FACTORY MODE</pre> </div>
5.	Press the  key to display the next screen. <div data-bbox="1071 1016 1521 1146" data-label="Text"> <pre>ALL CLEAR MODE</pre> </div>
6.	Press the <b>ENTER</b> key to display the next screen. <div data-bbox="1071 1215 1521 1346" data-label="Text"> <pre>ALL CLEAR COUNTER EEPROM</pre> </div>
7.	Press the <b>ENTER</b> . <div data-bbox="1071 1377 1521 1507" data-label="Text"> <pre>XXXXXXALL CLEAR YES  NO</pre> </div>
8.	Use the   keys to select <b>YES</b> (Clear ) or <b>NO</b> (Do not Clear).
9.	If <b>YES</b> is selected press the <b>ENTER</b> key to clear the EEPROM. <div data-bbox="1071 1682 1521 1812" data-label="Text"> <pre>XXXXXXALL CLEAR COMPLETED</pre> </div>
10.	Power <b>OFF</b> the printer and confirm the switches are in the <b>OFF</b> position.



7.6 Sample Test Prints



LARGE TEST PRINT



SMALL TEST PRINT

Illustrations shown are examples only and may not exactly match your output



## ***Troubleshooting***

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### ***8.1 Overview***

This section has been devised to help you if you are unable to produce output on the M-10e printer. Use this section to make sure the basics have been checked before deciding you are unable to proceed further. The design of the SATO M-10e printer is based upon proven technology and reliable components. When a problem occurs, the solution can be easily traced using the troubleshooting tables in this section. These tables list symptoms, probable causes, and suggested corrective actions. Many of the suggested corrective actions include references to a section or paragraph found elsewhere in this manual where more complete descriptions and procedures may be found.

To help you, this section has been divided into the following parts.

- *Checklist*
- *IEEE1284 Parallel Interface*
- *RS232C Serial Interface*
- *Universal Serial Bus Interface*
- *LAN Ethernet Interface*
- *Error Signals*
- *Troubleshooting Tables*
- *Head Pattern Examples*
- *Hex Dump Diagnostic Labels*

## 8.2 Check List

### ***Printer won't go On-Line***

- Is the Power LED on? Check the power cable and AC Fuse.
- Is the ERROR light on the front panel OFF? If this light is ON, it may mean the Print Head Assembly or the Label Hold-Down is not closed and latched in position.
- Are the Label and Ribbon lights on the front panel Off? If these lights are On, the labels or ribbons may be incorrectly loaded.

### ***Printer beeps and refuses to print***

- This is usually caused by an incorrect data stream. Try placing the printer in the Hex Dump mode and printing a copy of the data being sent to the printer. Examine the incoming data stream for incorrect command usage.

### ***Printer does not print when I send it data***

- Check the interface cable to make sure it is connected to the correct port on the PC.
- Make sure the correct Plug-In Interface Module is installed in the printer.
- If you are using the serial interface, verify that the baud rate, parity, data bit and stop bit selections of the host matches that of the printer.
- Some complex labels with large graphic images can take a long time to transmit to the printer (especially when using the serial interface) before they can be printed. Have you allowed enough time for this process?
- Make sure your computer program is sending data to the correct printer. More than one printer can be assigned to the same port in the Windows Printer dialog box. Make sure the printer listed in the Print Setup window is the M-10e TT/DT.

### ***The printer feeds a blank label***

- Is the label wide enough? The first dot print position is on the outside edge of the print head and narrow labels are justified toward the inside of the printer. You may have to configure the printer with an Offset value to correctly position the image on the label.
- If you are printing in the direct thermal mode, make sure you are using direct thermal paper.
- If you are printing in the thermal transfer mode, check to make sure the ribbon is loaded properly with the ink (dull side) in contact with the media.

### ***Poor quality printing***

- If the print has sections missing, visually inspect the print head to make sure it is clean and has no physical damage. If foreign matter is observed, clean the head using a cotton swab and the Thermal Print Head and Platen Cleaner from the SATO cleaning kit.
- If the print is too light, increase the heat setting using either software or the LCD panel. If the print is too dark and the bars in a bar code are fuzzy and run together, lower the heat setting. Fine adjustments can be made by adjusting the PRINT potentiometer on the front panel.
- If the print is too light, try varying the print speed using either the LCD panel or software commands.

- Is your ribbon/label combination compatible? Low quality paper labels may have a surface that is too rough for resin based ribbons to adhere. Wax based may not be able to adhere well to some synthetic label material.

### ***LCD displays “SENSOR ERROR”***

- Check to make sure the sensing method selected matches the media loaded. The M-10e TT/DT comes from the factory set for detecting a label gap (DSW2-2 = Off) and there must be a gap of at least 1/8” between labels. If Eye Mark (a blank line across the underside of the label) labels are used, DSW2-2 must be On to enable the reflective sensor.
- If continuous media is being used without any type of registration, the sensor must be turned off (DSW3-3=On). Otherwise, the printer will feed approximately 20” of paper and then give a “SENSOR ERROR” message.
- If the label gap or eye-mark registration bar does not extend across the width of the label, you may have to adjust the position of Label Sensor Assembly.
- Make sure the labels are routed through the Label Sensor, not over the top of it.

### ***LCD displays “FRAMING ERROR”***

- Communications format between the printer and the host must be synchronized when using the serial interface. The M-10e TT/DT High Speed Serial Interface Module comes from the factory set for no parity, 8 bits data, 1 stop bit (N,8,1) at 9600 bps and using a Ready/Busy data flow control handshake (DSW1-8=Off). If the computer is sending data in a different format, the printer is not able to correctly interpret it and a FRAMING ERROR message will appear on the LCD screen.

### ***The printer is receiving data and seems to print, but the labels come out blank***

- Check the ribbon to make sure the ink-side (the dull side) of the ribbon is in contact with the label. Other manufacturers may wind their ribbons differently. If they are loaded according to the diagram, it will place the ink-side of the ribbon up. If this happens, you should clean the ink from the print head before reloading the ribbon.

### ***LCD displays “PAPER END ERROR”***

- Is the Label Hold Down fully down and latched in position?
- Are the labels pushed all the way to the inside of the printer and held in position by the Label Edge Guide? The Paper Out switch is located near the inside edge of the label path. If it is not in contact with the media, a PAPER END ERROR results. Check to make sure a notch or hole in the label is not causing the Paper Out switch to give a false indication.

### ***LCD displays “RIBBON END ERROR”***

- If the Ribbon Supply Spindle is not turning, a RIBBON END ERROR will be generated. Make sure the ribbon supply core is not oversize and spinning freely on the spindle.
- If the Darkness setting is too high, it can sometimes make the ribbon “stick” to the label. The resulting interruption in the ribbon movement can give a false RIBBON END signal.
- Are you printing on direct thermal paper but have not configured the printer for direct thermal printing with DSW2-1=On? In the direct thermal mode, the ribbon motion sensor is disabled since ribbons are not used for direct thermal printing.

## 8.3 The IEEE1284 Parallel Interface

1. Is the IEEE1284 printer cable connected securely to your parallel port (DB25S Female) on the PC and to the Centronics connector on the printer?

*WARNING: Never connect or disconnect interface cables (or use a switch box) with power applied to either the printer or the host. This may cause damage to the interface circuitry and is not covered by warranty.*

2. Does the Parallel Interface cable used meet IEEE1284 specifications? If it does not and you are connected to an IEEE1284 or ECP parallel port on the computer, the printer may not be able to communicate correctly.
3. Is there more than one parallel interface port on your PC (LPT1, LPT2, etc.)? If so, make sure you are sending data out the correct port.
4. Is the IEEE1284 Interface Module installed in the printer? Older versions of the Parallel Interface module will not work correctly in the M-10e printer.
5. When you send the print job to the printer and it does not respond, do you get an error message on your PC that says “Device Fault” or something similar?

This may mean that the computer doesn’t know the printer is there. Verify that:

- a. Both ends of the cable are securely inserted into their respective connectors.
  - b. The printer in ON-LINE.
  - c. The cable is not defective. There are other things that can cause this error message on your computer but at this stage, a defective cable may be one of the reasons.
6. When you send the print job to the printer and it does not respond, and there is no error message on the PC.

- a. Check your data stream for some of the basics. Is your job framed as follows?

<ESC>A—Data—<ESC>Z

- b. Verify that you’ve included all required parameters in the data stream.
  - c. Verify the following:
    - You have not typed a “0” (zero) for an “O” (letter) or vice-versa.
    - You have not missed any <ESC> characters where they’re needed.
    - Make sure all printer command codes are capital letters.
    - Your protocol codes are set for Standard or Non-Standard and data stream is consistent with these.
7. If you’ve checked all the above and the printer still isn’t printing, you may want to try a Receive Buffer Hex Dump to determine what (if anything) the printer is receiving from your computer. See Hex Dump Mode in Section 8-11.

The Parallel port is now listening for incoming data. Send your print job. The printer will now print (only once) a Hexadecimal (Hex) Dump of everything it received from the host computer. Each 2-digit hexadecimal character represents a character the printer received.

It may be tedious but now you can analyze and troubleshoot the data stream.

**WARNING: A small label may produce a large amount of data when printed in Hex Dump.**

8. While checking the Hex Dump printout, look for 0D<sub>H</sub> 0A<sub>H</sub> (Carriage Return and Line Feed) characters throughout. The command string should be continuous. CR or LF characters are not allowed between the Start Command (<ESC>A) and the Stop Command (<ESC>Z). If you are using BASIC, it may be adding these characters automatically as the line wraps. Adding a “width” statement to your program can help to suppress these extra 0D<sub>H</sub> 0A<sub>H</sub> characters by expanding the line length up to 255 characters.

If you’re not programming in BASIC, check to see if you have an equivalent statement in the language you’re using to suppress extra carriage returns and line feeds from your data being sent out to the printer. We want the data stream to be one complete line going to the printer.

## 8.4 The RS232C (Serial) Interface

1. Is the RS232C Serial cable connected securely to your serial port on the PC (DB-25S Male) and to the RS232C connector on the printer?

*WARNING: Never connect or disconnect interface cables (or use a switch box) with power applied to either the printer or the host. This may cause damage to the interface circuitry and is not covered by warranty.*

2. Is the cable defective? At the very least, you should be using a “Null Model Cable” which crosses pins in a specific manner. This should enable your printer to print. We recommend that you use a cable built to specifications described in Section 3, Interface Specifications.
3. Is the RS232 Interface Module installed in the printer? The M-10e printers require the new Hi Speed Serial Interface (PN WCL40451) to take advantage of the faster data transmission speeds. The older Serial Interface Modules will work, but at a reduced capability.
4. Check for obvious errors in the data stream. Is the data properly framed with the<ESC> A and <ESC>Z commands?
5. If after sending your job to the printer, it only “beeps” and displays an error message on the LCD display, you may have a configuration problem. There may be some inconsistencies with the Baud Rate, Parity, Data Bits, or Stop Bits in relation to your host computer. If you are unsure as to what the printer’s current RS232 settings are, print a Configuration Test Label. It will list all of the current printer configuration settings.
6. If you are still unable to get printer output, try the Hex Dump as described in Section 8.11. In this case, the printer monitors the RS232C interface for incoming data.
7. From the Hex Dump, if you are seeing extra 0D<sub>H</sub> 0A<sub>H</sub> (CR and LF) characters, and are using BASIC, refer to the beginning of the Command Code section in the Operator and Technical Reference Manual.

## 8.5 The Universal Serial BUS (USB)

If nothing prints when doing a test print you will need to verify that the device drivers have been successfully installed by doing the following:

1. Click on Start, then Settings and then Control Panel.
2. Within the new Window, you should have an Icon listed as System. Double click on this.
3. Click on the Device Manager tab.
4. Make sure that the View Device by type is checked. Scroll down until you get to SATO-USB device.
5. Verify that it does not have any errors next to it. If it shows an error, remove the device and then reinstall it.
6. Reboot the PC and the Printer.
7. Consult the Windows Troubleshooting guide or contact technical support for further assistance.

## 8.6 Lan Ethernet Interface

### ***Installation Problems (Printer does not come up ready)***

If you cannot print to the SATO enhanced ethernet adapter after you install it, check the following:

1. Make sure the printer is powered on, that all cables are securely plugged in, and that the printer is On-line.
2. If possible, connect a terminal to the serial port. If you see the boot prompt, the print server firmware has not been loaded properly. If reloading does not fix the problem, try setting switch 1 to ON (factory defaults) and powering the print server off and then on again. If the problem persists, the product may be defective.

### ***Installation Problems (Printer comes up ready but you cannot print.***

If the printer starts up OK but you cannot print, the problem could be one of the following:

- There is a problem with the interface between the print server and the printer.
- There is a problem with the network connection or cabling.
- There is a queue setup problem, a printer server setup problem, or other protocol-related problem.

### ***Checking the Interface between the Print Server and the Printer***

First make sure that the cable between the print server and the printer is securely plugged in at both sides. Then:

1. Wait about two minutes after the printer is powered on and then run a printer self-test. If the self-test does not print, then there is possibly a hardware problem. Double check the connections.

In some rare instances, disabling NBUF with the command SET PORT P1 NBUF DISABLED will solve port compatibility issues.

## Checking the Network Connection and Cabling

If the self-test page prints but you cannot print documents, first check the network connection and cabling..

1. If you are connecting to a 10baseT network, verify that the OK LED is on. If the appropriate LEDs are not on, there is probably a bad 10baseT/100baseTX cable or the hub port is bad. If possible, try a different cable and hub port, or try connecting a different device (such as a PC) to the cable.
2. If you are using a repeater or hub, make sure that SQE (heartbeat) is turned off at the hub, (this is the default setting for most hubs). Also, if you have a hub or multiport repeater, verify that the hub or repeater port is good by trying the print server on a different port.
3. If you have a bridge or router located between the print server and the host computer, make sure that the device is set up to allow the print server to send and receive data from the host. For example, a bridge can be set up to only allow certain types of Ethernet addresses to pass through (a process known as filtering); therefore, such a bridge must be configured to allow print server addresses. Likewise, a router can be set up to pass only certain protocols, so be sure that the desired protocol can be passed through to the print server. In the case of routers, also make sure that the protocol is routable (LAT, NetBEUI, and DLC/LLC are not routable).
4. Make sure that you are not trying to perform an illegal operation, such as attempting to print a label larger than the printer can handle.
5. Check the individual protocol troubleshooting sections in this chapter for additional causes of intermittent printer problems.

## Intermittent Problems

If the print server and the printer start up OK, but you intermittently have problems printing, check the following:

1. Excessive NetWare polling can be a big cause of intermittent problems. Make sure that you have only enabled the NetWare file servers that you need for printing. (Do a SHOW NETWARE command from the print server console to see the enabled file servers.) If you have V3.21 or earlier firmware, make sure that NetWare polling is disabled by using the console command SET NETWARE RANGE 0. If you are not using NetWare, you can disable NetWare entirely with the command SET NETWARE DISABLED.
2. Check the individual protocol troubleshooting sections in this chapter for additional causes of intermittent printer problems.



**TCP/IP Troubleshooting**

If you are using TCP/IP and cannot print to the print server and you have checked the hardware and network as described in the previous steps, then check the following:

*(Note that it is always a good idea to try creating another print queue to eliminate the possibility of setup errors.)*

1. The problem may be the result of mismatched or duplicate IP addresses. Verify that the IP address is correctly loaded into the SATO enhanced ethernet adapter and make sure that no other nodes on the network have this address, (DUPLICATE IP ADDRESSES ARE THE BIGGEST CAUSE OF TCP/IP PRINTING PROBLEMS). If the address is not correct, then check whether the loading procedure was properly executed.
2. If you used NCP, XCONFIG, or ccr to enter the IP address, make sure that you exited the remote console properly with a CTRL-D or EXIT command.
3. If you used rarp, make sure that you started the rarp daemon using the rarpd, rarpd -a, in.rarpd-a, in.rarpd -a or equivalent command. Verify that the /etc/ethers file contains the correct Ethernet address and that the SATO enhanced ethernet adapter name matches the name in the /etc/hosts file.
4. If you used bootp, make sure that bootp is enabled, (i.e., the “#” is removed from the bootp entry) in the /etc/inetd.conf file. Verify that /etc/bootptab file is correctly configured.
5. Also verify that the host computer and the print server are either on the same subnet, (for example, if the print server has a subnet mask of 255.255.255.0, the host must have the same subnet mask) or that the router is properly configured to pass data between the two devices.
6. Make that the the /etc/printcap file (if applicable) is typed in correctly. In particular, look for missing “.” and “\” characters because a small error anywhere in the file can have major consequences. Also check the /usr/spool directory to make sure that you have created a valid spool directory.
7. If you are using a Berkeley-based UNIX, make sure that the daemon is started on Berkeley based systems with the command *lpc start printer*, where *printer* is the name of the local print queue.
8. If you are using an AT&T-based UNIX, make sure the printer is enabled, (enable *printer*, where *printer* is the name of the local print queue).
9. Make sure that the lpr/lpd remote line printer service are running on the host computer. (Refer to your host computer documentation for information on how to do this.)
10. If you cannot print from DEC TCP/IP Services for VMS (UCX), make sure that you have version 2.0B or later of this software, because earlier versions will not work with the SATO enhanced ethernet adapters.
11. If jobs are run together or do not eject from the printer, try setting the service (remote printer) with EOT set to the appropriate printer reset string. This string is number 4 (%-12345X) for all newer HP printers. For example:

SET SERVICE BINARY\_P1 EOT4

### **TCP/IP Troubleshooting (Cont)**

12. If the lines of a text file are staggered, make sure that you have specified a remote printer (rp) name of TEXT in your /etc/printcap file.
13. If you are having trouble printing long jobs (over 1MB) add the line mx#0 to your /etc/printcap file entry.
14. If you are using the raw TCP port and are experiencing intermittent queue stalling problems, make sure that queueing is enabled on the service, (do a SHOW SERVICE command from the remote console, and note if “Q” is listed in the OPT column for the desired service). If it is not, enable queueing with the command SET SERVICE *servicename* QUE ENA command.
15. If the wrong IP address is loaded, check your network for file servers that have DHCP, BOOTP, or rarp enabled, and make sure that these file servers are not set up to load IP addresses into the print server. Also, make sure that you do not use the command SET IP BOOT 0 to disable TCP/IP broadcasts; instead, you should use the command SET IP METHOD STATIC (unpredictable results will occur otherwise).
16. If you have problems with queues locking up when the active print job is deleted, try setting the IP timeout to one minute with the console command, SET IP TIMEOUT 1.
17. There were a number of lpr/lpd related problems fixed in V3.46 firmware. Therefore, if you are experiencing intermittent queue problems and you have an older version of firmware, SATO recommends you upgrade to V3.46 or later.

### **NetWare Troubleshooting**

If you are cannot print from NetWare and you have checked the hardware and network as described in the previous steps, first verify that the print server is attached to the server queue by going to PCONSOLE, selecting PRINT QUEUE INFORMATION, and then CURRENTLY ATTACHED SERVERS. If the SATO enhanced ethernet adapter does not appear in the list of attached servers, then check the following:

*(Note that it is always a good idea to try deleting and recreating the print server and creating a new print queue in order to eliminate the possibility of setup errors).*

1. If you cannot create a print queue, make sure that you have sufficient NetWare privileges. With NetWare 3.12 and earlier, you MUST be logged in as SUPERVISOR, (not someone with Supervisor priveleges). If you are having problems creating queues with NetWare 4.xx and later, try logging in as ADMIN. Also, make sure that you are not trying to run XAdmin32 with the Microsoft NetWare client. (You must use the Novell 32-bit client.)
2. If you changed the login password, you must change the password in bothe the SATO enhanced ethernet adapter (using the PCONSOLE Print Server Information Change Password command).
3. Make sure that you have enabled at least one NetWare file server using the SET NETWARE SERVER *servername* ENABLED command.
4. Have you exceeded your NetWare user limit?

**NetWare Troubleshooting (Cont)**

5. If you have V3.00 or earlier firmware, make sure you enable either 802.3 or Ethernet II frames on your file server, particularly if you have a NetWare 3.12 or 4.xx file server (these NetWare versions default to 802.2) since these versions of firmware do not support 802.2 or SNAP frames. Also, if you are using NetWare 4.xx make sure you have enabled binary emulation on the file server.
6. Make sure that the print server name you used in PCONSOLE *exactly* matches the name that is configured in the print server, and make sure it is defined as a Queue Server for the print queue.
7. If you are running both 802.3 and Ethernet II frames on different file servers on your network, there is a possibility that the print server may not make a connection to the desired file server. Try forcing the frame type to the desired one using the SET NETWARE FRAME command from the SATO enhanced ethernet adapter remote console.
8. If you are losing portions of your print job and you are using the DOD NetWare driversk try setting the TIMEOUT parameter in your CAPTURE statement to a higher value, (at least 50 seconds for Windows).
9. Because of a bug in the vendor's software driver, file servers equipped with certain models of SMC Ethernet controllers may crash when a SATO enhanced ethernet adapter is connected to the network. This problem, which primarily affects EISA-based controllers made in 1993 or earlier, is not specific to SATO enhanced ethernet adapters and can be fixed by upgrading the file server with the latest SMC drivers. Contact SMC technical Support at (516) 435-6250 for additional information and instructions on how to download the new drivers from the SMC bulletin board.

**Windows NT/Lan Server Troubleshooting**

If you are having trouble printing with Windows NT or LAN Server, check the following:

1. Make sure that you can ping the print server using the DOS or OS/2 command PING *ipaddress*, where *ipaddress* is the IP address of the SATO enhanced adapter. If you cannot ping the print server, you will not be able to print.
2. Make sure that TCP/IP and lpr printing are installed and running on the Windows NT system or the LAN Server file server.
3. If you are having problems printing to the SATO enhanced ethernet adapter from a client PC that is connected to a Windows NTAS or LAN Server file server, verify that you can print a job directly from the DOS or OS/2 prompt on the file server. If you can print from the file server but not from the client, then the problem is probably with the NetBEUI communications rather than with the TCP/IP link to the SATO enhanced ethernet adapter. Check your file server network setup, (for example, make sure that you can print from the client to other printers on the network).
4. If you have problems with Windows NT queues locking up when the active print job is deleted, try setting the IP timeout to one minute with the console command SET IP TIMEOUT 1.
5. There were a number of lpr/lpd related problems fixed in the V3.46 firmware. Therefore, if you are experiencing intermittent queue problems and you have an older version of firmware, SATO recommends you upgrade to V3.46 or later.

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**Windows 95/98 Peer-to-Peer Troubleshooting**

If you are having trouble printing with Windows 95 Peer-to-Peer network, check the following:

1. If the print server does not show up under HP JetAdmin on a Windows 95/98 Peer-to-Peer network, try removing all of the Windows 95 network software from the Network Control panel and then reinstalling them as follows:
  - First install the **IPX/SPX-Compatible Protocol**, the **Client for Microsoft Networks**, and the network adapter card driver.
  - Restart the system, and then add the **HP JetAdmin** service.
2. Because of the many changes that have been incorporated in Windows 95.98 Peer-to-Peer printing since its introduction, it is a good idea to upgrade to the latest version of JetAdmin, (available on the HP web site at <http://www.hp.com>).

## 8.7 Error Signals

The LCD display, Front Panel LED indicators and buzzer provide a visual/audio indication of the type of error encountered.

LED	LCD MESSAGE	AUDIBLE BEEP	ERROR CONDITION	POSSIBLE CAUSES
Error On	Machine Error	1 Long	Machine Error	1. Defective Board
Error On	EEPROM Error	1 Long	EEPROM Read/Write	1. EEPROM not installed correctly. 2. Overwriting EEPROM.
Error On	Head Error	1 Long	Head	1. Electrical head malfunction
Error On	Sensor Error	3 Short	Sensor	1. Paper jam. 2. Sensor DSW setting. 3. Sensor level adjustment.
Error Blinks	Card R/W Error	1 Long	Memory Card Read/Write	1. Card not formatted 2. No card recognized.
Error Blinks	Card Low Battery	1 Long	Memory Card Battery Low	1. Card battery needs replacement.
Error Blinks	Card No Battery	1 Long	No Battery in Card	1. Card needs battery installed.
Error Blinks	Head Open	3 Short	Head Open	1. Head not latched. 2. Head latch switch bad.
Error Blinks	Cutter Error	3 Short	Cutter	1. Cutter jam. 2. Cutter sensor dirty.
Error On Line Blinks	Parity Error	3 Short	RS232 Parity Error	1. RS232 parameter mismatch.
Error On Line Blinks	Overrun Error	3 Short	RS232 Overrun Error	1. RS232 parameter mismatch
Error On Line Blinks	Framing Error	3 Short	RS232 Framing Error	1. RS232 parameter mismatch
Error On Line Blinks	Buffer Over	3 Short	Buffer Overflow	1. Command stream exceeds buffer size.
Error Blinks	Paper End	3 Short	Media End	1. No paper. 2. Paper incorrectly loaded.
Error Blinks	Ribbon End	3 Short	Ribbon End	1. Needs new ribbon roll. 2. Ribbon sensor needs adjustment.
	Download Error R/W Error Mem Full Error	3 Short	Download Error	1. Read/Write error. 2. Corrupted download file. 3. Download file too large.
	CopyCard/Format R/W Error No Card Error Mem Full Error	3 Short	Card Copy or Format Error	1. R/W error during copying. 2. Card not installed properly. 3. File too large.

## 8.8 Error Screens

<div data-bbox="175 289 591 420" data-label="Text"> <p><i>MACHINE ERROR</i></p> </div>	<p>Machine Error Screen</p> <p>Cause: Defective Board</p> <p>Solution: Replace Board</p> <p>Warning Sound: One long beep</p> <p>External Signal: Machine Error</p>
<div data-bbox="175 541 584 672" data-label="Text"> <p><i>EEPROM ERROR</i></p> </div>	<p>EEPROM Error Screen</p> <p>Cause: 1. EEPROM is not installed properly 2. Over writing of EEPROM</p> <p>Solution: 1. Install EEPROM correctly 2. Replace EEPROM</p> <p>Warning Sound: One long beep</p> <p>External Signal: Machine Error</p>
<div data-bbox="175 829 581 959" data-label="Text"> <p><i>PARITY ERROR</i></p> </div>	<p>Parity Error Screen</p> <p>Cause: 1. Does not match requirement of interf RS232C 2. Cable is not connected correctly</p> <p>Solution: 1. Confirm correct interface and match requirement</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Machine Error</p>
<div data-bbox="175 1102 581 1232" data-label="Text"> <p><i>OVERRUN ERROR</i></p> </div>	<p>Overrun Error Screen</p> <p>Cause: 1. Does not match requirement of interf RS232C 2. Cable is not connected correctly</p> <p>Solution: 1. Confirm correct interface and match requirement</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Machine Error</p>
<div data-bbox="175 1386 571 1516" data-label="Text"> <p><i>FRAMING ERROR</i></p> </div>	<p>Framing Error Screen</p> <p>Cause: 1. Does not match requirement of interf RS232C 2. Cable is not connected correctly</p> <p>Solution: 1. Confirm correct interface and match requirement</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Machine Error</p>
<div data-bbox="175 1690 576 1820" data-label="Text"> <p><i>BUFFER OVER</i></p> </div>	<p>Buffer Over Screen</p> <p>Cause: 1. Data exceeds receiving buffer. 2. Does not match the interface protocol. (Control signal or data is ignored and host data is sent).</p> <p>Solution: 1. Correct the host program so not to exceed the receiving buffer. 2. Change the host program until it matches the interface protocol.</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Machine Error</p>

## Error Screens

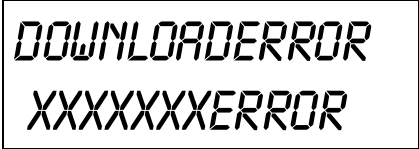

<div data-bbox="131 302 545 430" style="border: 1px solid black; padding: 10px; text-align: center;"> <h3>HEAD OPEN</h3> </div>	<p>Head Open Screen</p> <p>Cause: 1. Head is not locked 2. The micro switch used for head opening and closing needs adjusting or is defective.</p> <p>Solution: 1. Lock the head 2. Replace or adjust the micro switch</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Machine Error</p>
<div data-bbox="131 617 545 745" style="border: 1px solid black; padding: 10px; text-align: center;"> <h3>PAPER END</h3> </div>	<p>Paper End Screen</p> <p>Cause: No paper</p> <p>Solution: Load the paper properly</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Paper End</p>
<div data-bbox="131 890 545 1018" style="border: 1px solid black; padding: 10px; text-align: center;"> <h3>RIBBON END</h3> </div>	<p>Ribbon End Screen</p> <p>Cause: 1. No ribbon 2. Run out of ribbon 3. Ribbon slit sensor does not match</p> <p>Solution: 1. Set ribbon correctly 2. Clean and adjust the ribbon delivery route. 3. Adjust the ribbon slit sensor level</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Machine Error</p>
<div data-bbox="131 1226 560 1354" style="border: 1px solid black; padding: 10px; text-align: center;"> <h3>SENSOR ERROR</h3> </div>	<p>Sensor Error Screen</p> <p>Cause: 1. Paper jam 2. Sensor level does not match 3. Type of sensor does not match</p> <p>Solution: 1. Clean and adjust the paper delivery route. 2. Adjust the sensor level 3. Set the sensor to match the paper</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Machine Error</p>
<div data-bbox="131 1541 553 1669" style="border: 1px solid black; padding: 10px; text-align: center;"> <h3>HEAD ERROR</h3> </div>	<p>Head Error Screen</p> <p>Cause: Out of head</p> <p>Solution: Replace the head</p> <p>Warning Sound: Three short beeps</p> <p>External Signal: Machine Error</p>



## Error Screens

<div data-bbox="248 401 664 529" data-label="Text"> <p><i>CARDR/WERROR</i></p> </div>	<p>Card Reader/Write Error Screen</p> <p>Cause:     1. Out of card               2. Retrieve unregistered number               3. Card not formatted               4. Conduct registration for card processing</p> <p>Solution:   1. Insert the card               2. Confirm the host program               3. Format the card               4. Remove the card protect</p> <p>Warning Sound: One long beep External Signal: Machine Error</p>
<div data-bbox="243 756 660 884" data-label="Text"> <p><i>CARDLOWBATTERY</i></p> </div>	<p>Card Low Battery Screen. (Check during startup and when using)</p> <p>Cause:     The battery in the card is exhausted</p> <p>Solution:   Replace the battery inside the card. Then reformat and register the card because the data inside the card is lost.</p> <p>Warning Sound: One long beep External Signal: Machine Error</p>
<div data-bbox="232 1123 647 1251" data-label="Text"> <p><i>CARDNOBATTERY</i></p> </div>	<p>Card No Battery Screen. (Check during startup and when using)</p> <p>Cause:     No battery inside the card</p> <p>Solution:   Replace the battery inside the card. Then reformat and register the card because the data inside the card is lost.</p> <p>Warning Sound: One long beep External Signal: Machine Error</p>
<div data-bbox="237 1444 652 1572" data-label="Text"> <p><i>CUTTER ERROR</i></p> </div>	<p>Cutter Error Screen</p> <p>Cause:     1. Paper jam at cutter side               2. Cutter slit is not operating properly</p> <p>Solution:   1. Clean the cutter               2. Clean the cutter sensor</p> <p>Warning Sound: Three short beeps External Signal: Machine Error</p>

## Error Screens

	<p>Program/Font Download Error Screen Press <b>ENTER</b> key to return to download wait screen Display error below, "R/W", "MEM FULL"</p> <p>Cause: 1. Read/Write error during downloading 2. No download domain</p> <p>Solution: 1. Check the download file 2. Confirm the size of the download file</p> <p>Warning Sound: Three short beeps</p>
	<p>Card Copy/Format Error Screen Press <b>ENTER</b> key to return to original selection screen Display error below, "R/W", "NO CARD", "MEM FULL"</p> <p>Cause: 1. Read/Write error occurs during copying 2. Card is not installed 3. No copy domain</p> <p>Solution: 1. Check the copy file 2. Install the card 3. Confirm the copy domain (size)</p> <p>Warning Sound: Three short beeps</p>

## 8.9 Troubleshooting Tables

### Print Quality Problems

Symptom	Probable Cause	Suggested Corrective Action
Image Voids	Poor quality labels	Use thermal transfer compatible stock
	Poor quality ribbons	Use genuine SATO ribbons
	Ribbon not matched to label stock	Check with media suppliers
	Damaged electronics	Replace circuit board (Sec. 6.8)
	Damaged platen	Replace platen (Sec. 6.5)
Ribbon Wrinkle	Poor head alignment	Adjust head balance (Sec. 5.3, 5.4) Adjust ribbon roller Adjust head alignment
	Poor ribbon tension	Adjust ribbon tension (Sec. 5.5)
	Worn platen	Replace platen Sec. 6.5)
	Foreign material on head/platen	Clean head and platen
	Foreign material on labels	Use high quality label stock
	Damaged print head	Replace print head (Sec. 6.3)
Light Images	Poor quality labels	Use thermal transfer compatible stock
	Poor quality ribbons	Use genuine SATO ribbons
	Low print head energy/darkness	Adjust darkness control (See Operator Manual)
	Low print head pressure	Adjust head balance (Sec. 5.3, 5.4)
	Ribbon not matched to label stock	Use Premier II ribbon with a "1C" thermal transfer ribbon stock or equivalent for optimum results
	Foreign material on head	Clean head and platen
	Excessive print speed	Reduce print speed setting
Smearing	Poor quality labels	Use high quality label stock
	Poor quality ribbons	Use genuine SATO ribbons

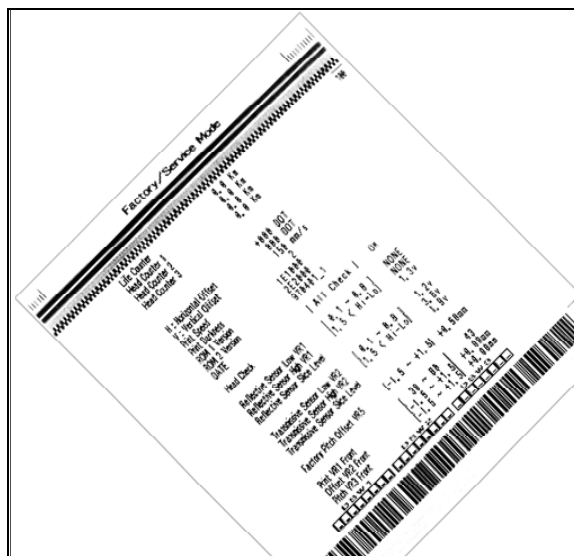
## Print Quality Problems

Symptom	Probable Cause	Suggested Corrective Action
Smearing	Foreign material on head/platen	Clean head and platen
	Foreign material on labels	Use high quality label stock
	Excessive print head energy	Adjust darkness control
	Excessive print speed	Adjust print speed
	Excessive head pressure Carbon tension wrong	Adjust head balance (Sec. 5.3, 5.4)
No Ribbon Movement	Incorrect ribbon core size	Use genuine SATO ribbons
	No + 24 volt output	Test power supply and replace if required (Sec. 4.3, 6.10)
	Damaged electronics	Replace circuit board (Sec. 6.8)
No Label Movement	Incorrect label pitch sensor selected	Select correct label sensor type (DSW2-2)
	No + 24 volt output	Replace fuse on main PCB (Sec. 6.12) Test power supply and replace if necessary (Sec. 4.3, 6.10)
	Loose set screw on platen pulley/stepper motor	Tighten set screws
No Printed Image	Print head not connected	Verify print head connector fully seated at head and main PCB (Sec. 6.3)
	Ribbon upside down	Use genuine SATO ribbons
	No + 24 volt output	Test power supply and replace if necessary (Sec. 4.3, 6.10)
	Damaged print head	Replace print head (Sec. 6.3)
	Damaged electronics	Replace circuit board (Sec. 6.8)
Back light but no words on display or no display	The most likely cause is the ribbon cable has fallen out or not seated fully into connector	Verify that the cable and connector are properly seated. Display POT not positioned properly
POWER LED not on	AC power cable not connected	Verify that the cable is connected to the printer and the AC outlet

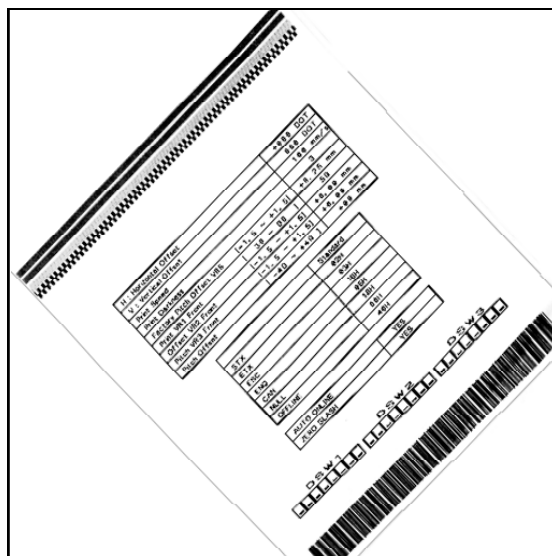
## Print Quality Problems

Symptom	Probable Cause	Suggested Corrective Action
POWER LED not on	Main power fuse defective	Replace fuse (Sec. 6.12)
	Defective power supply	Test power supply and replace if defective (Sec. 4.3, 6.10)
ERROR LED on	Head not locked	Close and latch head release
LABEL LED on	Label supply roll empty	Replenish label supply
	Label stock not routed through sensor	Reload labels
	Label sensor not positioned correctly	Adjust sensor position
	Label sensor blocked	Clean label sensor
	Incorrect label sensor threshold setting	Adjust label sensor threshold (Sec. 4.7 & 4.8)
RIBBON LED on	Ribbon supply roll empty	Replenish ribbon supply
	Ribbon supply out of alignment	Realign ribbon sensor
	Ribbon sensor blocked	Clean ribbon sensor
	No cardboard core on ribbon rewind	Use cardboard core on ribbon rewind

## 8.10 Head Pattern Examples

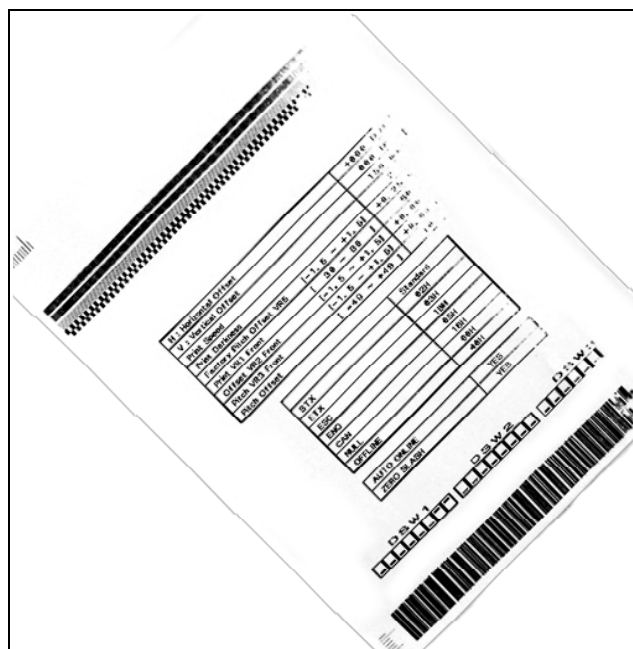


**FACTORY DEFAULT**

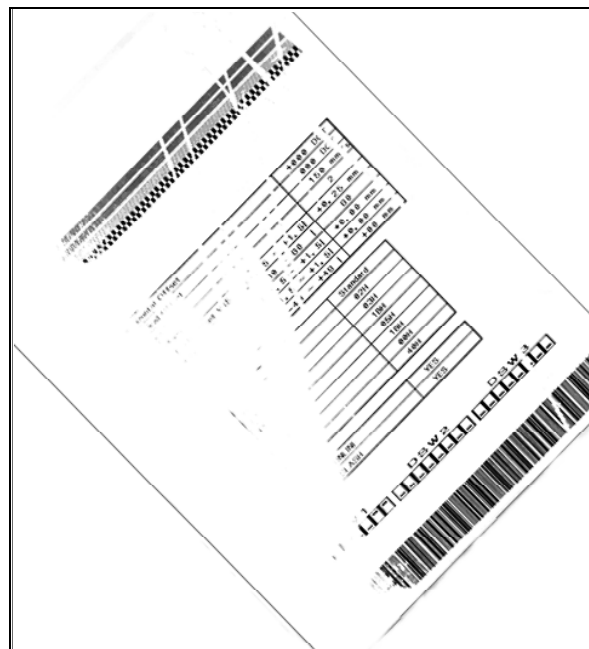


**GOOD ADJUSTMENT,  
CLEAR DARK EVEN TEXT**

**FEED  
DIRECTION**



**POOR HEAD ALIGNMENT,  
BALANCE OUT OF ADJUSTMENT**



**POOR HEAD ALIGNMENT,  
BALANCE OUT OF ADJUSTMENT**

**ILLUSTRATIONS SHOWN ARE EXAMPLES  
ONLY AND WILL NOT EXACTLY MATCH  
YOUR OUTPUT**

3BON TENSION,  
ORN PLATEN,  
REIGN MATERIAL, DAMAGED  
INT HEAD



## FEED DIRECTION



## 8.11 Hex Dump Diagnostic Labels

In addition to the User Print Labels, the printer contents of the receive and print buffers can be examined using the Hex Dump Test Labels.

### Print Buffer Hex Dump

The contents of the Print Buffer can be examined using the Hex Dump mode. The label numbers each line of data received in the left hand column, the data in hexadecimal format in the center columns, followed by the same data in ASCII format in the right hand column.

STEP	PROCEDURE
1.	Turn on the printer.
2.	Send and print a label.
3.	Place the printer in the Off-Line mode by pressing the <b>LINE</b> key. The LINE LED should go out.
4.	Place <b>DSW2-4</b> in the On position
5.	Place the <b>LINE</b> key to place the printer back On-Line
6.	Press the <b>FEED</b> key
7.	A label should be printed containing the contents of the print buffer in Hexadecimal format.
8.	Return <b>DSW2-4</b> to the Off position.
9.	Turn the printer off and then back on to place it back in the normal print mode.

### Receive Buffer Hex Dump

The data that is being received by the printer (before it is placed in the Print Buffer) can be examined by using the Hex Dump Mode. The label numbers each line of data received in the left hand column, the data in hexadecimal format in the center columns, followed by the same data in ASCII format in the right-hand column.

STEP	PROCEDURE
1.	Turn on the printer.
2.	Place <b>DSW2-4</b> in the On position.
3.	Turn on the printer.
4.	Transmit the data to the printer.
5.	The data received is printed on a label in hexadecimal format.
6.	Return <b>DSW2-4</b> to the Off position.
7.	Turn the printer off and then back on to place it back in the normal mode.

## ***Optional Accessories***

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### ***9.1 Overview***

This section contains instructions for installing the following optional accessories:

- *PCMCIA Memory Expansion*
- *Plug-In Interface Modules*
- *Label Cutter Installation*
- *Flash Memory ROM Expansion*
- *Real Time Clock Installation*
- *Stacker Kit Assembly*

## 9.2 PCMCIA Memory Expansion

### DESCRIPTION

The Memory Card Option provides the connectors and interface board for one PCMCIA memory cards slots. The printer memory can be expanded up to 16MB.

<b>Type</b>	SRAM or Flash-ROM
<b>Applicable Specifications</b>	PCMCIA Version 2.1 (JEIDA Version 4.1)
<b>Size</b>	Up to 4 MB SRAM or 16MB Flash ROM
<b>Connector Pins</b>	68
<b>Battery</b>	Two years for SRAM type (approximately)
<b>Write Protect</b>	Yes
<b>Low Battery Detect</b>	Yes (SRAM only)

### INSTALLATION

Instructions for installing the Memory Card Option are included with the installation kit.

### ERROR HANDLING

Memory Card error conditions are indicated to the operator using a combination of the ERROR LED on the front panel and the audible indicator.

ERROR DESCRIPTION	INDICATION	REMEDY
Low Battery - Low battery condition is detected when printer is powered on.	ERROR LED: Blinking Audible Beep: 1 long Display: Card Low Battery	Depress LINE key to print Card Status.  Replace Memory Card battery. Note that all data will be lost when the battery is removed.
Card R/W Error 1 No card is inserted. 2 Card is write protected. 3 Invalid store/recall number. 4 Card has not been initialized.	ERROR LED: On Audible Beep: 1 long Display: Card R/W Error  Printer must be powered off to reset.	1 Insert card into selected slot. 2 Remove write protect tab. 3 Correct program 4 Initialize card with BJF command.
Warning 1 Duplicate number. 2 Data not in print area. 3 Data overflows card memory.	Audible Beep: 1 short Display: None  Printer will ignore invalid commands.	1 Correct program. 2 Correct program. 3 Use card with more capacity.

## 9.3 Plug-In Interface Modules

The Series “e” printers have user changable Plug-In Interface Modules. The Interface Module is accessible from the Rear Panel and is retained by two screws. Use the following procedure to replace an interface module.

1. Turn power off both the printer and the host and remove the power and interface cables.

**WARNING:** *Never connect or disconnect interface cables (or use a switch box) with power applied to either the host or the printer. This may cause damage to the interface circuitry and is not covered by warranty.*

2. Remove the two Interface Module Retaining Screws.
3. Grasp the Interface Module and pull it out of the connector.
4. Place the new Interface Module in the slot and press inward firmly until it is properly seated.
5. Replace the two Interface Card Retaining Screws.
6. If the new Interface Module is for a serial interface, set DSW1 for the proper operation.
7. Connect the interface cable to the connector

---

## ***9.4 Label Cutter Kit Installation***

***To Be Determined***

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## ***9.5 Flash Memory Flash Expansion***

***To Be Determined***

---

## **9.6 Real Time Clock Installation**

***To Be Determined***



---

## **9.7 Stacker Kit Installation**

***To Be Determined***



## ***Spare Parts List***

---

### ***10.1 Overview***

The following parts lists are included in this section.

- Bottom Assembly
- Side Frame RH Assembly
- Side Frame LH Assembly
- Main PCBA Assembly
- Ribbon PCB Assembly
- Frame C Assembly
- Frame E Assembly
- Stay Assembly
- Head Lock Assembly
- Pressure Roller Assembly
- Platen Roller Assembly
- Feed Roller Assembly
- Guide Plate Top Assembly
- Head Assembly
- Ribbon Unwind Assembly
- Ribbon Rewind Assembly
- Cover Assembly
- Keyboard Assembly
- Tear Off Cutter Assembly
- Cutter Assembly (Option)
- Unwind Assembly (Option)
- Stacker Assembly (Option)
- Interface Board Assembly

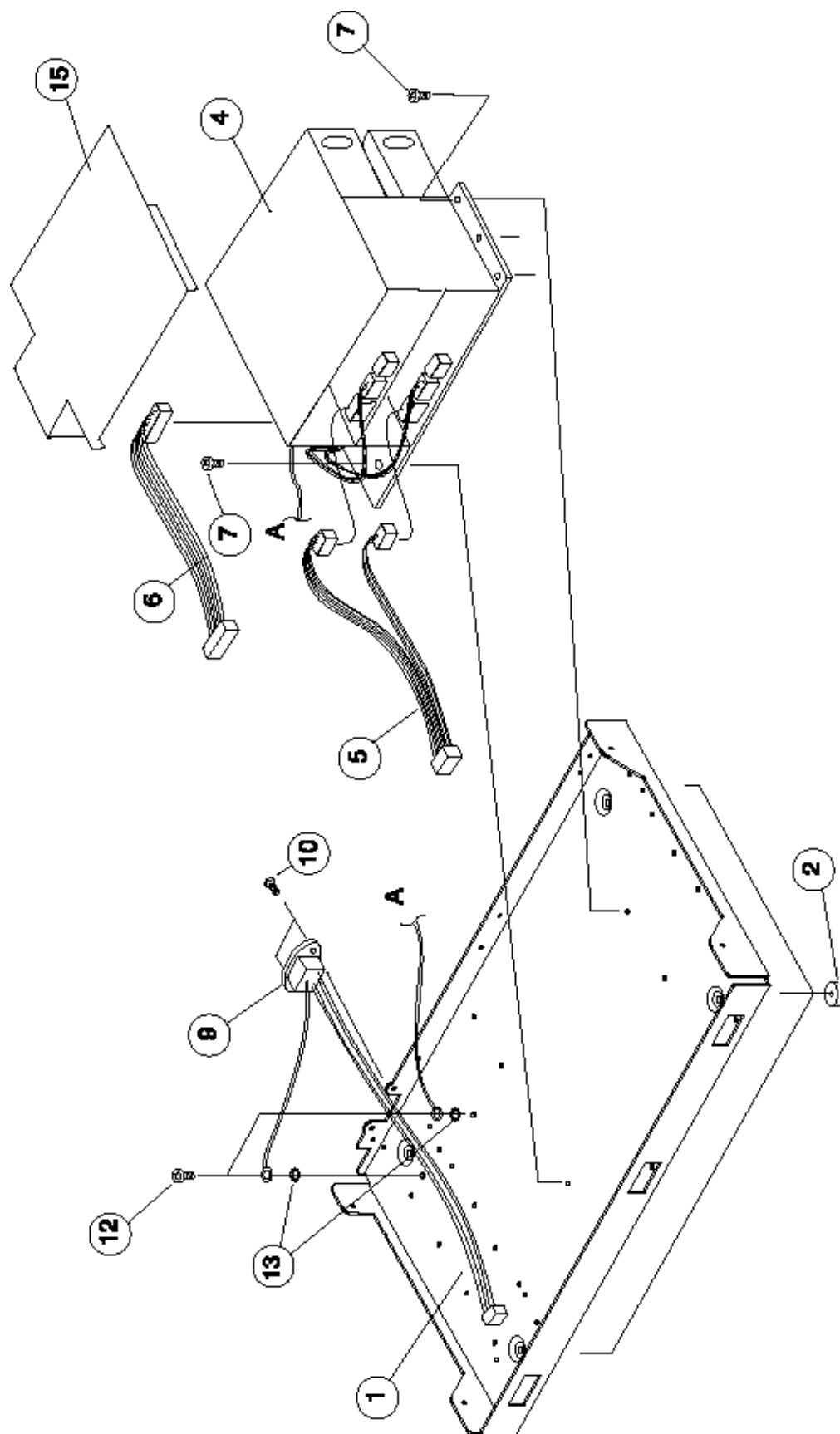
**Note:**

**The spare parts information in this manual is accurate at the time of publication of this service manual and is subject to change without notice.**

**Bottom Assembly**

NO	CODE	DESCRIPTION	QTY
1	PA5A60010	BOTTOM PLATE	1
2	PT6680100	RUBBER FOOT	4
4	K00023000	POWER SUPPLY	1
5	RH1A60200	POW1 CORD SET	1
6	RH1A60300	POW2 CORD SET	1
7	MD4300622	PAN HEAD SCREW	7
9	RH1A60010	AC CORD SET	1
10	MD3300822	PAN HEAD SCREW	2
12	MD0400622	PAN HEAD SCREW	2
13	NB2040022	LOCK WASHER	2
15	P03036000	COVER	1

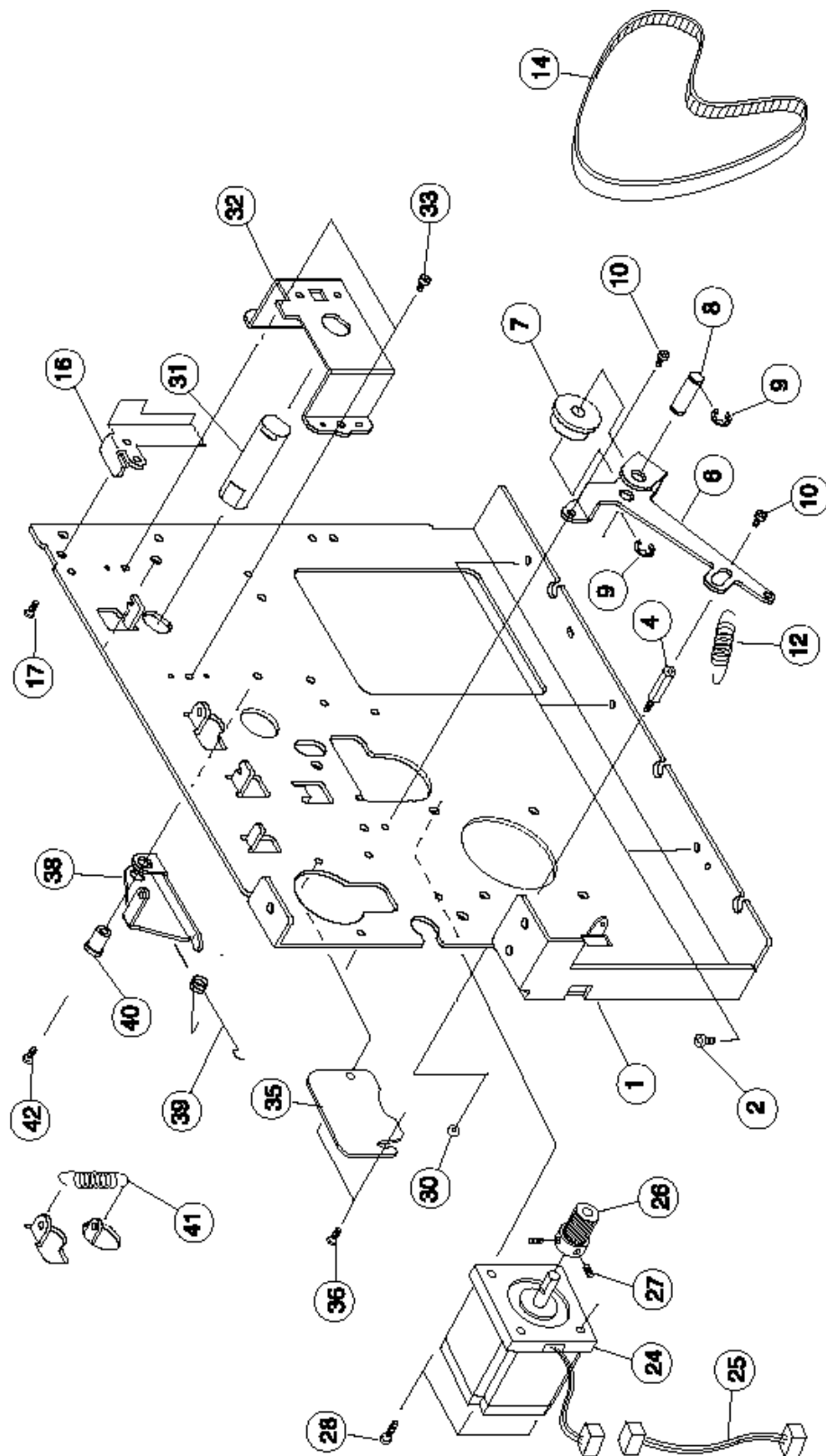
# Bottom Assembly



## Side Frame RH Assembly

NO.	CODE	DESCRIPTION	QTY
1	PA6A60002	SIDE FRAME(R)	1
2	MD4300622	PAN HEAD SCREW	3
4	PT9A60000	PCB SPACER	1
6	PA3A60001	BRACKET	1
7	PE3720100	TENSION ROLLER	1
8	PB0740900	SHAFT(TENSION ROLLER)	1
9	ND0040030	E-SNAP RING	2
10	MD4300622	PAN HEAD SCREW	2
12	PC0A60101	SPRING(TENSION ROLLER)	1
14	PU3400060	TIMING BELT(S2M*400)	1
16	P00228010	HEAD STOPPER	1
17	MD4300622	PAN HEAD SCREW	1
24	KB200371A	STEPPER MOTOR	1
25	RH1A61700	STEPPER MOTOR CABLE	1
26	PR1A60500	PULLEY	1
27	MJ1400524	W-POINT SET SCREW	2
28	MD3401022	PAN HEAD SCREW	4
30	MT1300522	HEX NUT	1
31	PB0A60100	SHAFT(TOP FRAME)	1
32	PA3A60200	RIBBON BRACKET(RL)	1
33	MD0300422	PAN HEAD SCREW	2
35	PA1A60100	SUPPORTER CLAMP(B)	1
36	MJ9300322	THIN HEAD SCREW	2
38	PA3A60800	PLATE(ESCAPE)	1
39	PC2A60000	SPRING(FEED ROLLER)	1
40	PB0A60202	SHAFT(SPRING)	1
41	P00669000	SPRING (FEED ROLLER)	1
42	MD4301422	PAN HEAD SCREW	1

# Side Frame RH Assembly

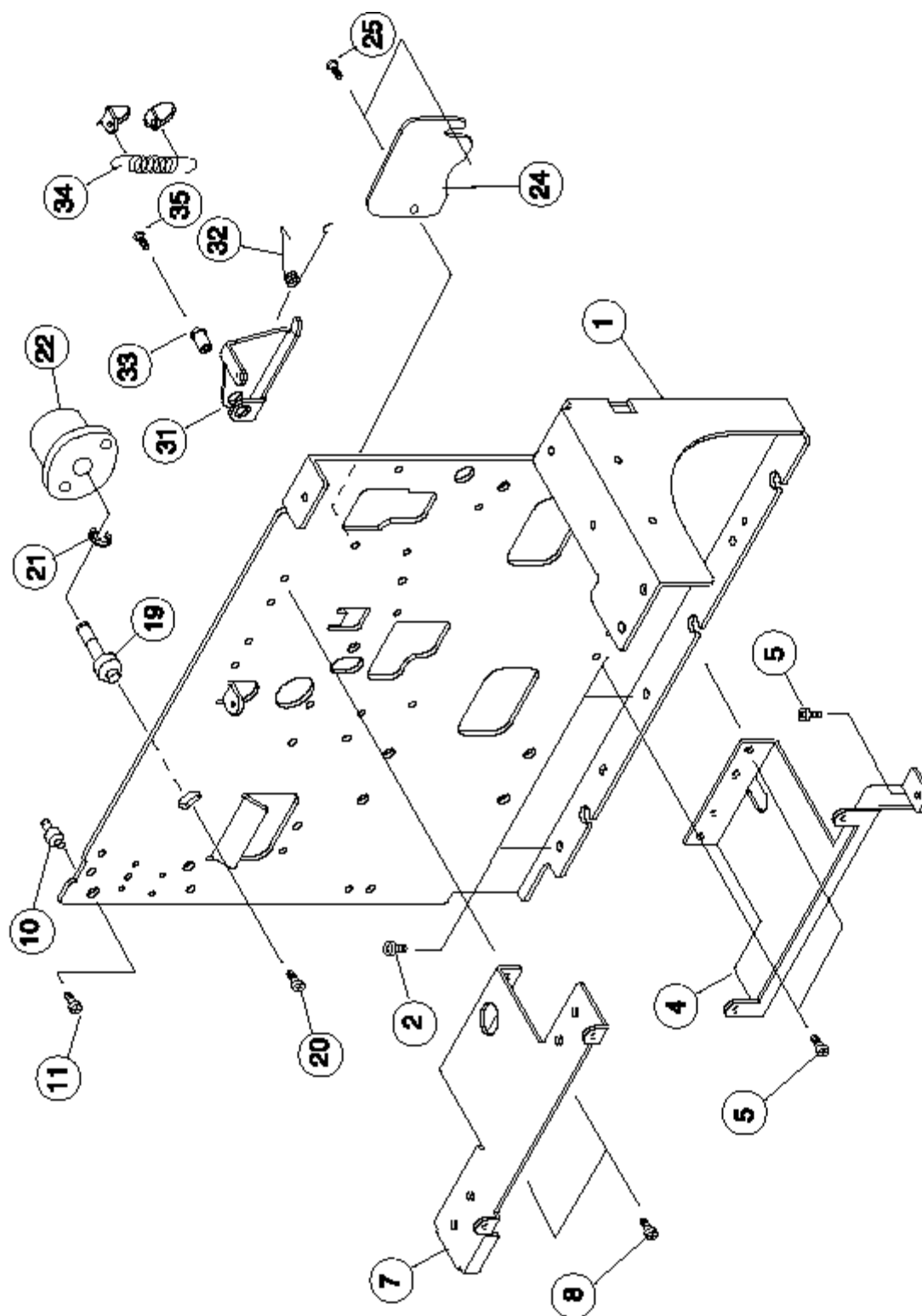


## Side Frame LH Assembly

NO.	CODE	DESCRIPTION	QTY
1	P00271000	SIDE FRAME(L)	1
2	MD4300622	PAN HEAD SCREW	3
4	PA3A60400	PCB BRACKET(BOTTOM)	1
5	MD4300422	PAN HEAD SCREW	3
7	PA3A60500	PCB BRACKET(TOP)	1
8	MD0300422	PAN HEAD SCREW	2
10	PB0A62101	POST(COVER)	1
11	MD4300622	PAN HEAD SCREW	1
19	P03042000	RIBBON SHAFT(FF)	1
20	MD4401022	PAN HEAD SCREW	1
21	ND0060030	E-SNAP RING	1
22	PT9A60100	ONE WAY HINGE	1
24	PA1A60100	SUPPORTER CLAMP(B)	1
25	MJ9300322	THIN HEAD SCREW	2
31	PA3A60300	PLATE	1
32	PC2A60100	SPRING(FEED ROLLER)L	1
33	PB0A60202	SHAFT(SPRING)	1
34	P00669000	SPRING (FEED ROLLER)	1
35	MD4301422	PAN HEAD SCREW	1

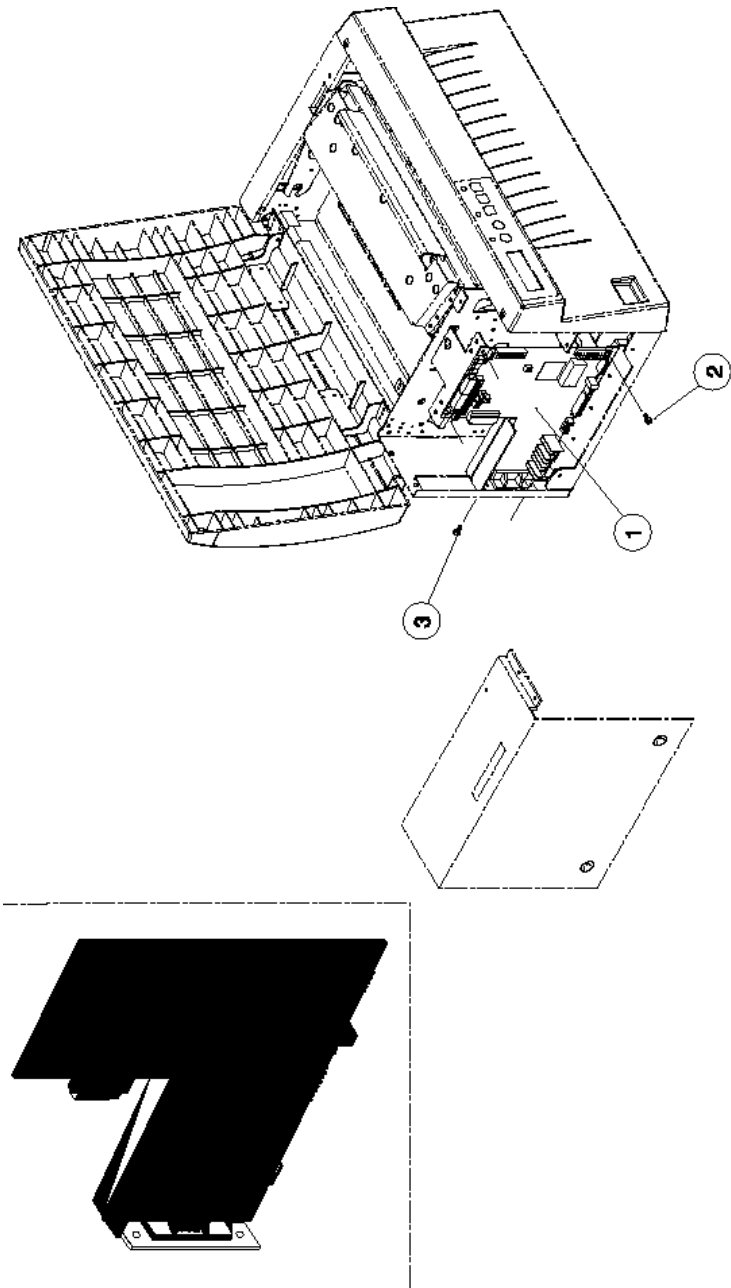


# Side Frame LH Assembly



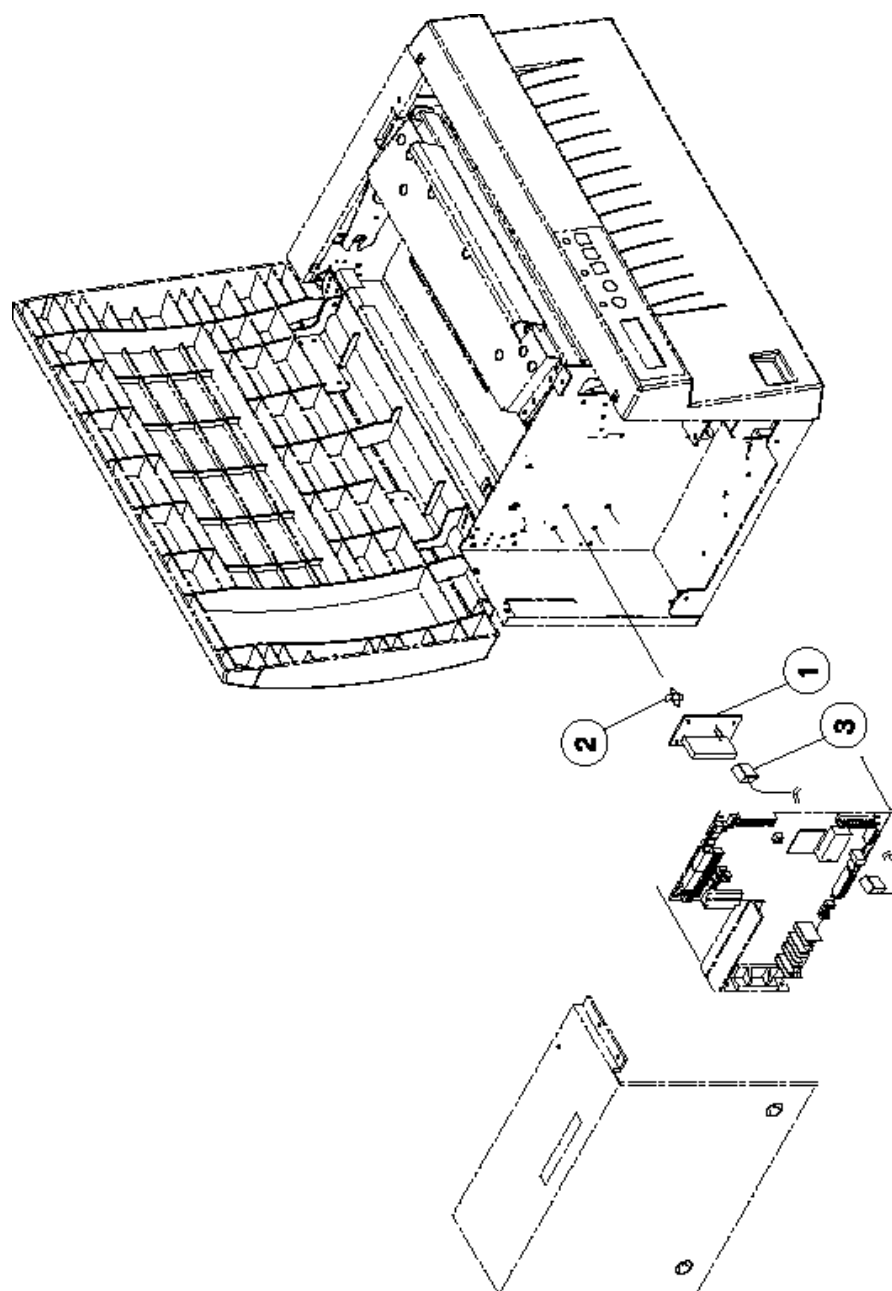
Main PCBA Assembly

ITEM	CODE	DESCRIPTION	QTY
1	R01077002	MAIN PCBA	1
2	MD4300622	PAN HEAD SCREW	4
3	MA2300622	BIND SCREW	2



## Ribbon PCB Assembly

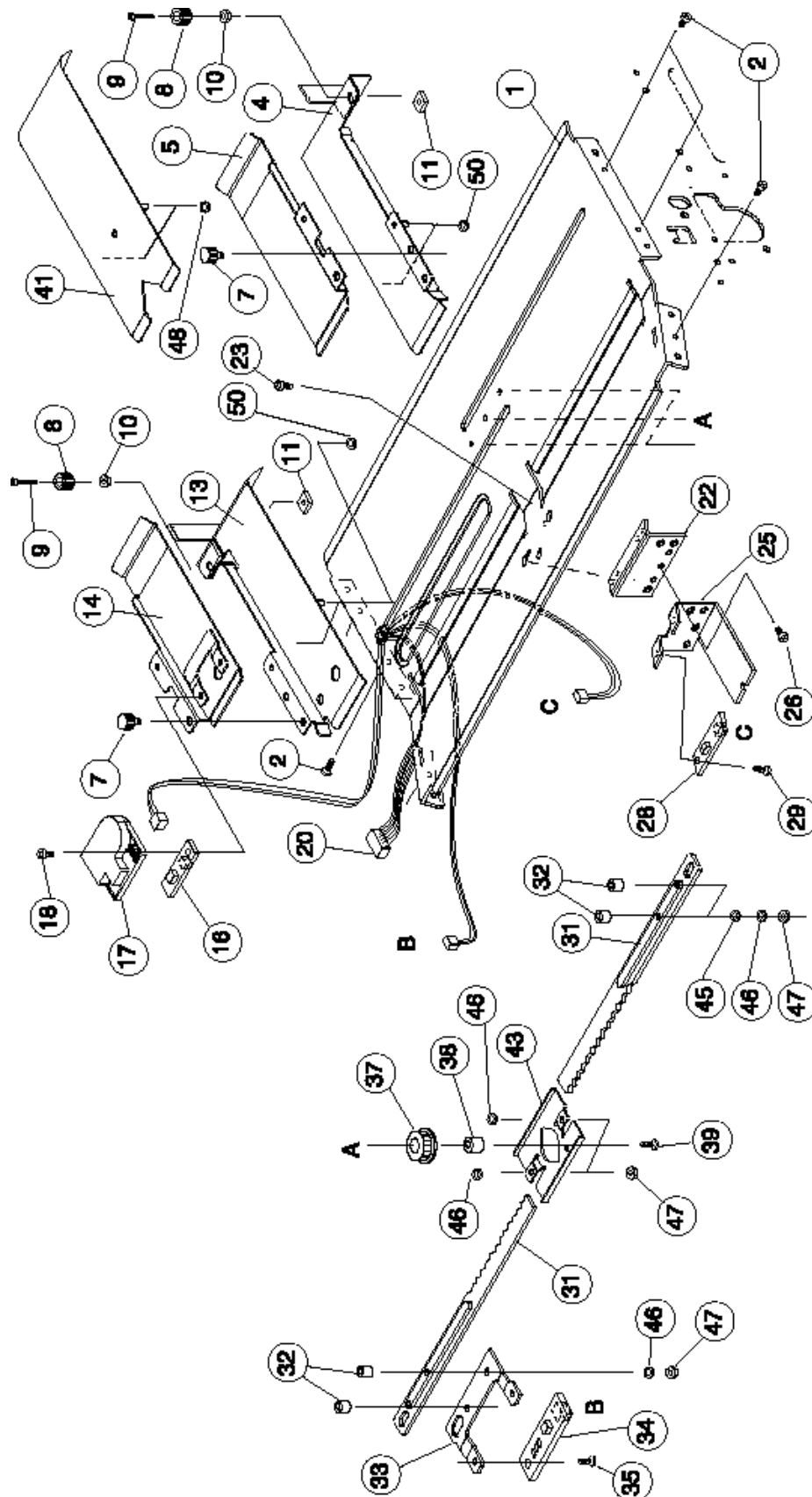
ITEM	CODE	DESCRIPTION	QTY
1	RJ1A60500	RIBBON PCBA	1
2	KE900711A	CARD SPACER	4
3	RH1A61101	RIBBON CABLE ASSY	1



## Frame C Assembly

NO.	CODE	DESCRIPTION	QTY
1	PR4A60001	FRAME(C)	1
2	MD4300622	PAN HEAD SCREW	6
4	PR3A60002	RACK PLATE(R)	1
5	PA3A61301	GUIDE PLATE(R)	1
7	PT9A60200	HAND SCREW	2
8	PE2750400	GUIDE COLLAR(STACKER)	2
9	MC0301622	PAN HEAD SCREW	2
10	MT1300522	HEX NUT	2
11	PA1A60000	NUT PLATE	2
13	PR3A60102	RACK PLATE(L)	1
14	PR3A60510	GUIDE PLATE(L)	1
16	RJ1A60300	CABLE SENSOR (TOP)	1
17	PE6A60001	COVER (SENSOR)	1
18	MD3300522	PAN HEAD SCREW	1
20	RH1A61001	SEN CABLE ASSY	1
22	PA3A61100	SENSOR BRACKET	1
23	MA1300422	FLAT SCREW	2
25	PA3A61000	SENSOR BRACKET (B)	1
26	MD4300622	PAN HEAD SCREW	1
28	RJ1A60400	AUTO LOAD SENSOR	1
29	MD4300422	PAN HEAD SCREW	1
31	PE8A60010	PLATE(RACK)	2
32	P00585010	COLLAR	4
33	PA3A61700	SENSOR BRACKET (F)	1
34	RJ1A60203	LABEL SENSOR (BOTTOM)	1
35	MD4300422	PAN HEAD SCREW	1
37	PE8500200	GEAR	1
38	P00619000	COLLAR	1
39	MD4300622	PAN HEAD SCREW	1
41	PR3A60201	GUIDE PLATE(BOTTOM)	1
43	PA3A61800	GUIDE PLATE(RACK)	1
45	NA1030022	WASHER	2
46	NB0030022	WASHER	6
47	MT1300522	HEX NUT	6
48	NA1030022	WASHER	2
50	NA1030022	WASHER	4

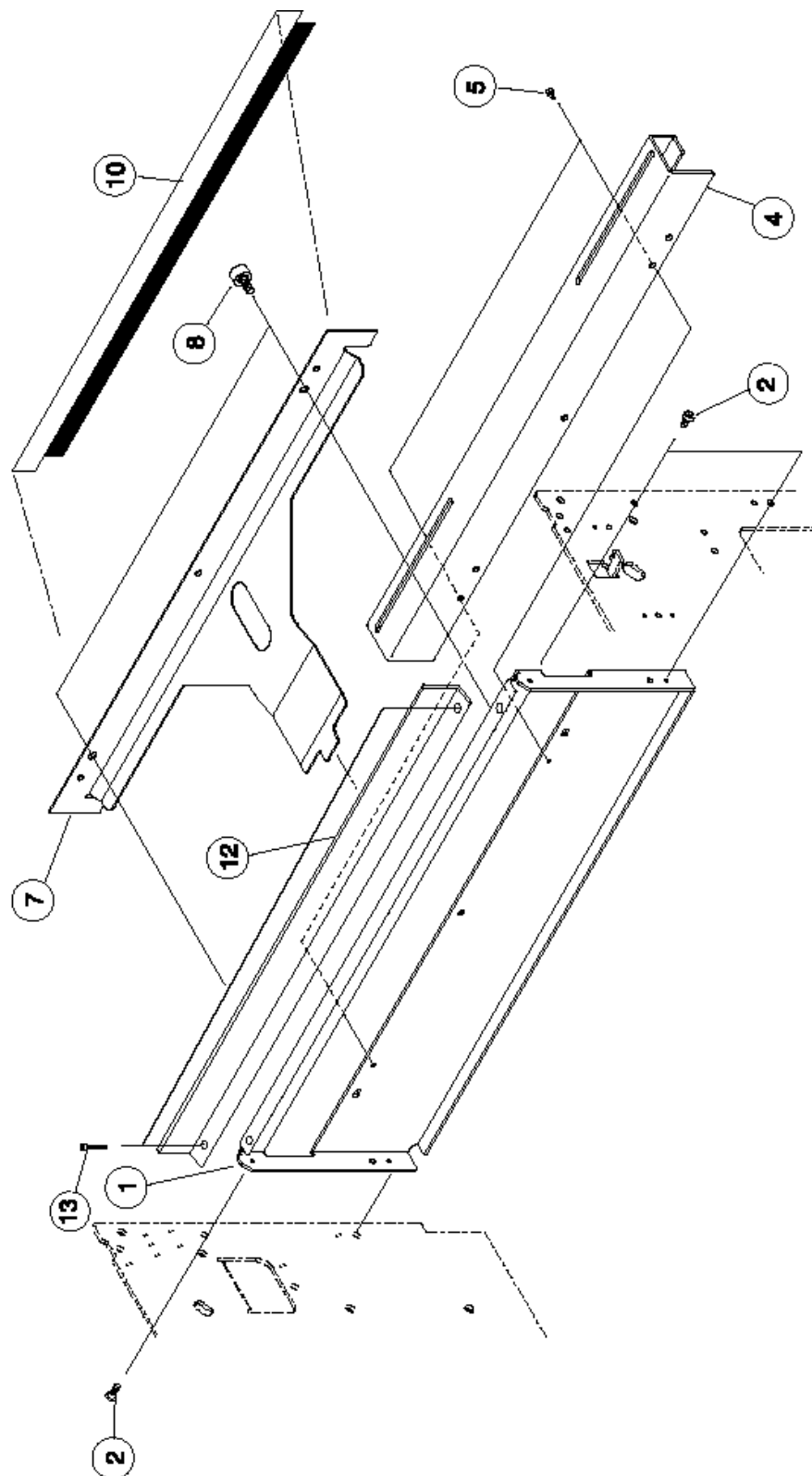
# Frame C Assembly



## Frame E Assembly

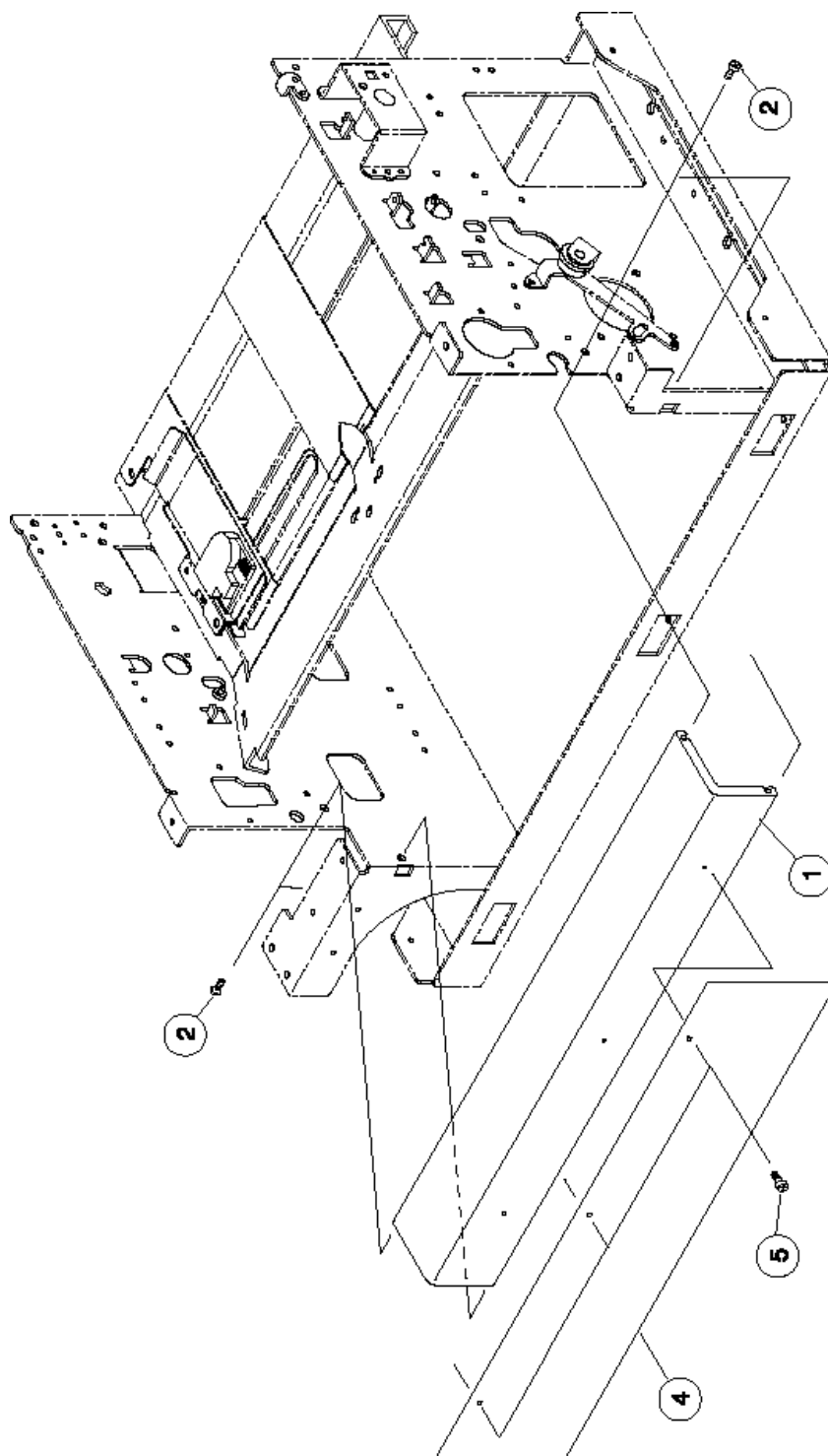
ITEM	CODE	DESCRIPTION	QTY
1	PA3A61910	FRAME(E)	1
2	MD4300822	PAN HEAD SCREW	4
4	PA3A62010	SLIDE GUIDE	1
5	MD4300622	PAN HEAD SCREW	2
7	PA3A62101	GUIDE PLATE(TOP)	1
8	PT9A60200	HAND SCREW	2
10	PT9A60500	ANTI STATIC BRUSH	1
12	PA3A66410	BEAM	1
13	MD4300622	PAN HEAD SCREW	2

# Frame E Assembly



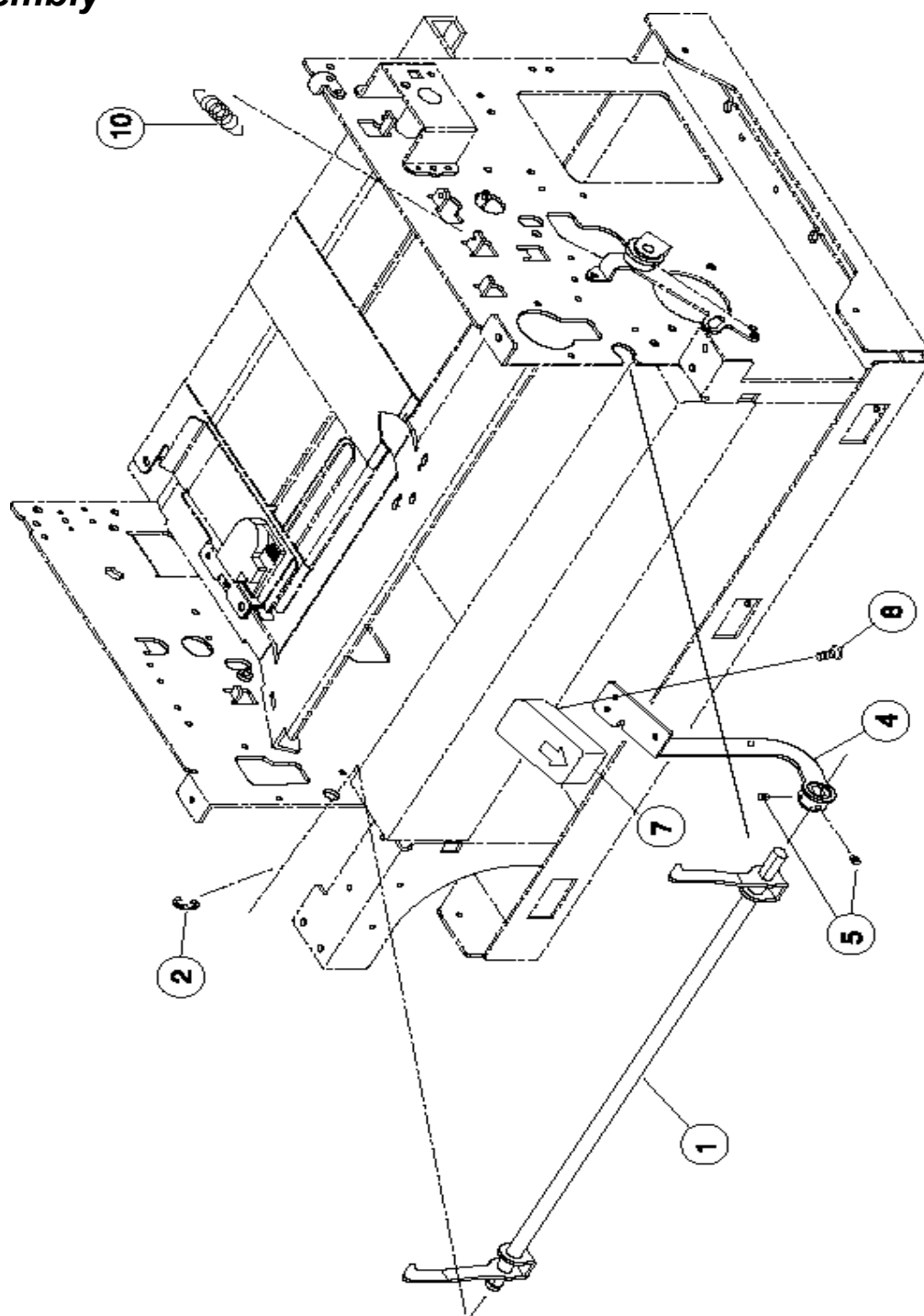
## Stay Assembly

NO.	CODE	DESCRIPTION	QTY
1	PD1A60000	STAY	1
2	MD4401022	PAN HEAD SCREW	4
4	PA2A60500	PROTECTOR	1
5	MD4300622	PAN HEAD SCREW	3





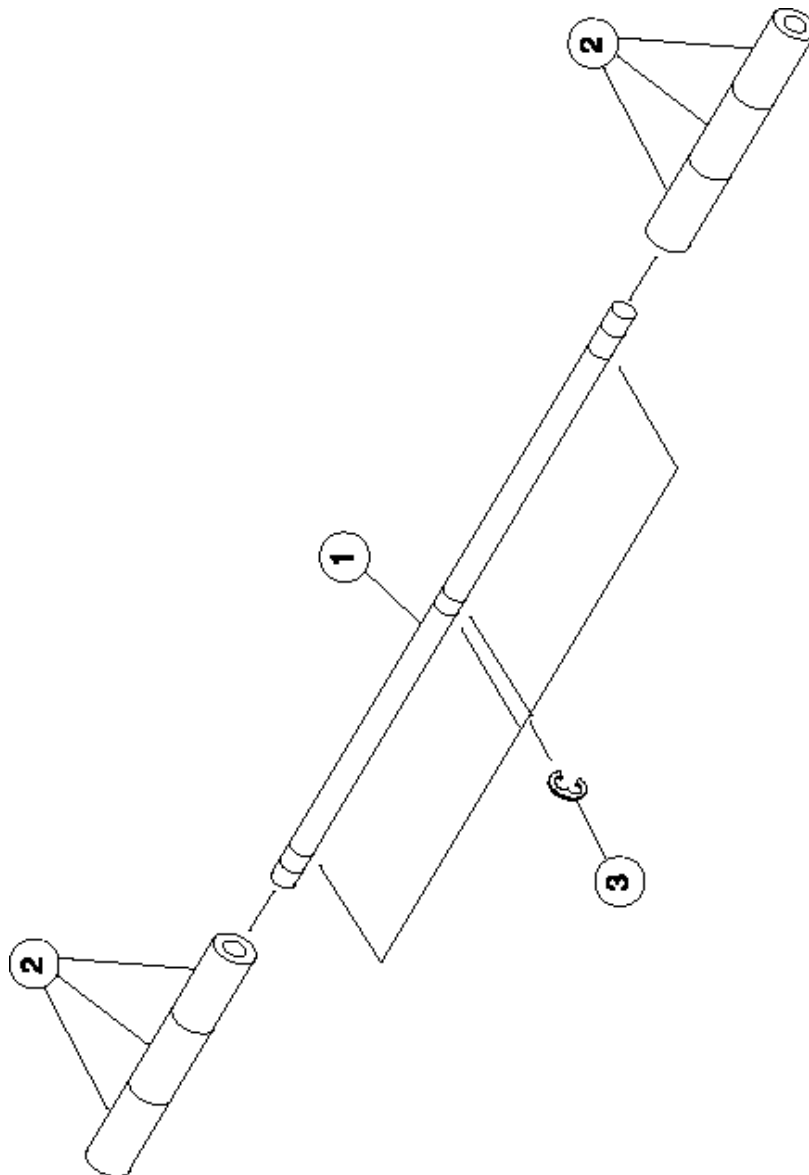
# Head Lock Assembly



NO.	CODE	NAME	QTY
1	PR3A60300	HEAD LOCK SHAFT	1
2	ND0060030	E-SNAP RING	1
4	PR3A60401	HEAD LOCK LEVER	1
5	MJ1400524	W-POINT SET	2
7	PE6A60400	COVER(HEAD LOCK LEVER)	1
8	MH0250621	P-TIGHT SCREW	3
10	PC0A60000	HEAD LOCK SPRING	1

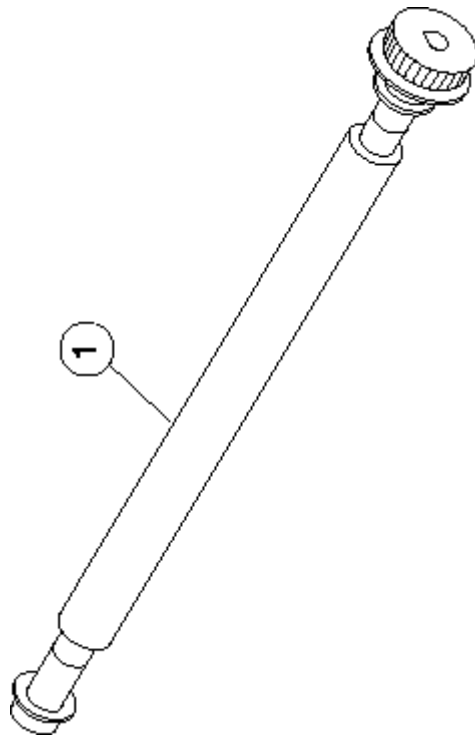
## Pressure Roller Assembly

NO.	CODE	DESCRIPTION	QTY
1	PB0A60510	SHAFT(PRESSURE ROLLER)	1
2	PB3A60000	ROLLER	6
3	ND0070030	E-SNAP RING	4



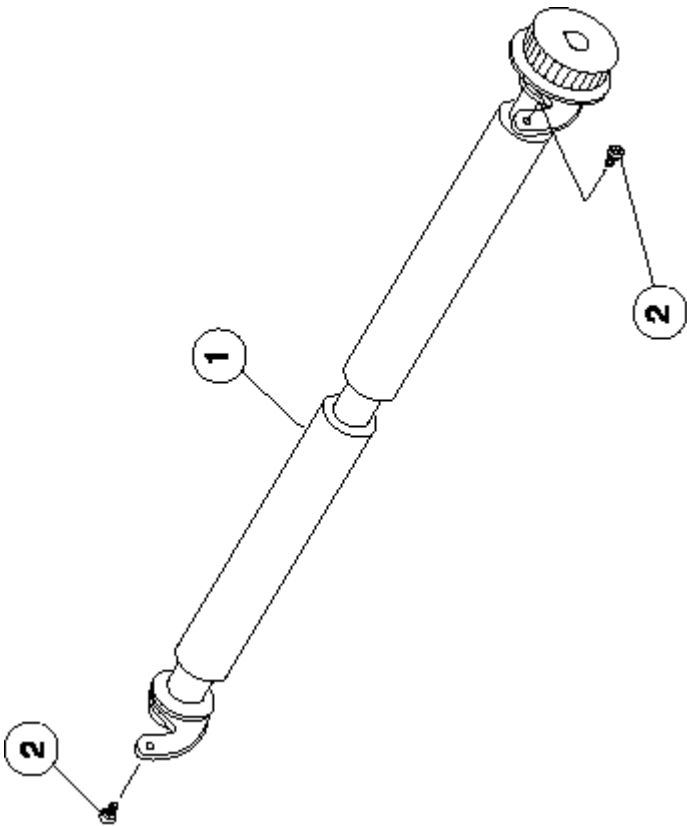
**Platen Roller Assembly**

NO.	CODE	DESCRIPTION	QTY
1	RC1A60100	PLATEN ROLLER ASSY	1



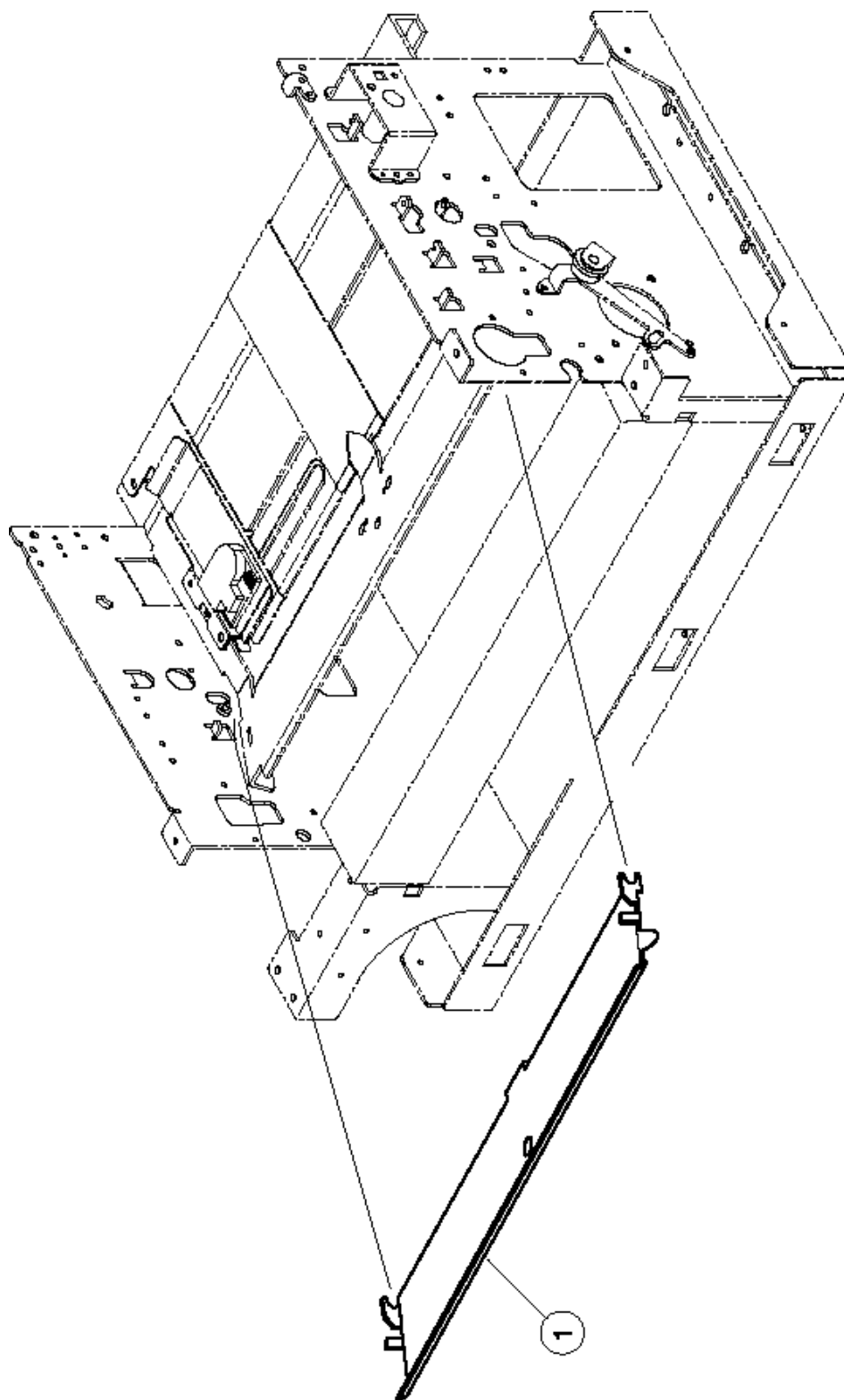
**Feed Roller Assembly**

NO.	NO.	NAME	QTY
1	RC1A60301	FEED ROLLER ASSY	1
2	MD4300621	PAN HEAD SCREW	2



## Guide Plate Top Assembly

NO.	CODE	DESCRIPTION	QTY
1	R01150000	GUIDE PLATE(TOP)	1



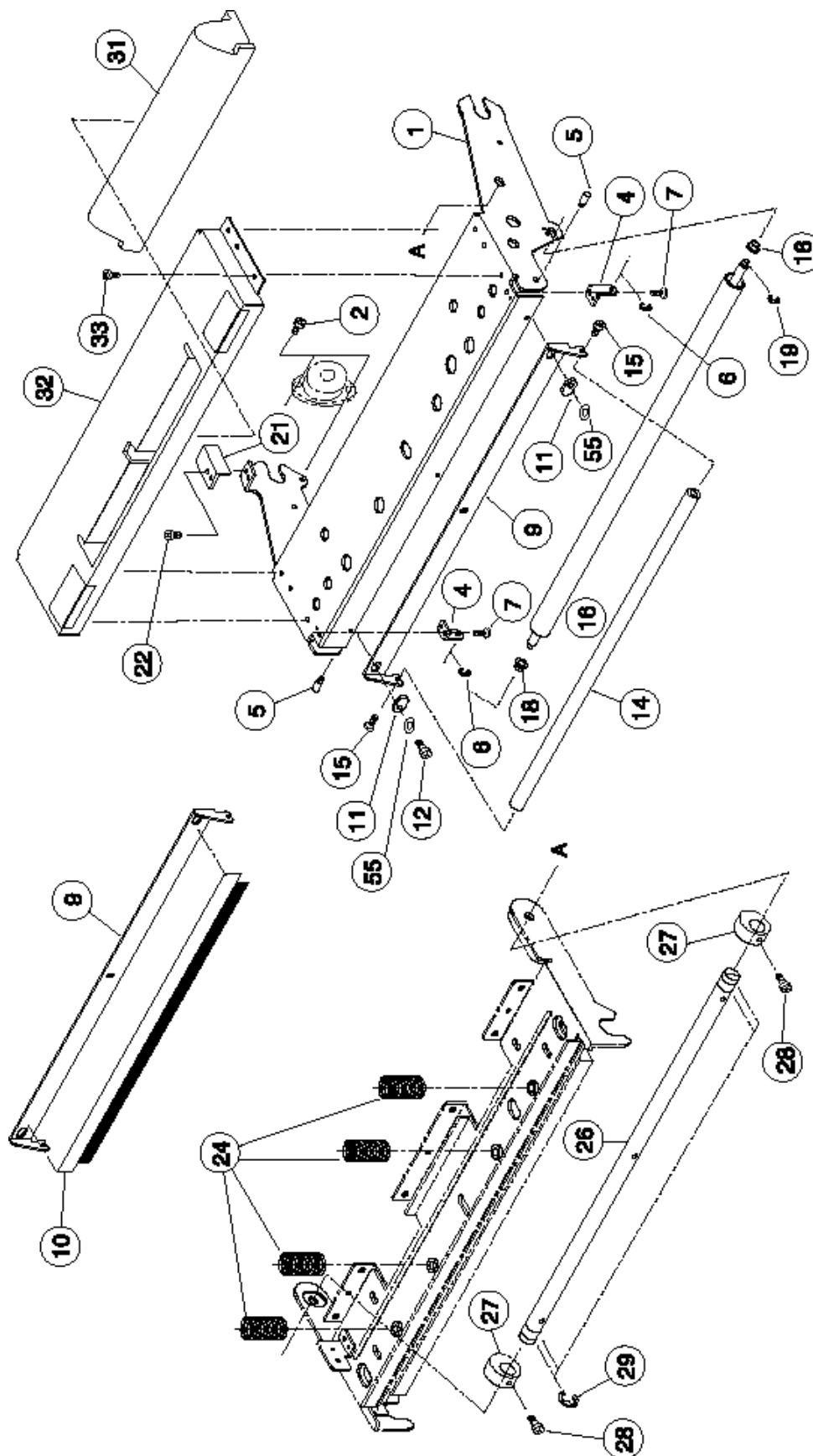
## Head Assembly

NO.	NO.	NAME	QTY
1	PA3A62701	TOP FRAME	1
2	MD4300622	PAN HEAD SCREW	2
4	PA3A62800	HEAD CLOSE BRACKET	2
5	PB0A60800	HEAD LOCK STUD	2
6	ND0025030	E-SNAP RING	2
7	MD0300422	PAN HEAD SCREW	2
9	PA3A63000	CONVERT PLATE	1
10	PT9A60300	ANTI STATIC BRUSH	1
11	PL2720100	ADJUST COLLAR	2
12	MD4300822	PAN HEAD SCREW	2
14	PB0A60900	CONVERT SHAFT	1
15	MA0300622	PAN HEAD SCREW	2
16	PR7A60200	SHAFT(RIBBON)	1
18	PT2A60100	BEAR FIGHT	2
19	ND0030030	E-SNAP RING	1
21	P03038000	CABLE GUIDE	1
22	MD4300622	PAN HEAD SCREW	1
24	PC1A60000	HEAD SPRING	4
26	PB0A61001	HEAD ADJUST SHAFT	1
27	PB5A60100	HEAD ADJUST CAM	2
28	MA0301422	PAN HEAD SCREW	2
29	ND0050030	E-SNAP RING	4

## Head Assembly

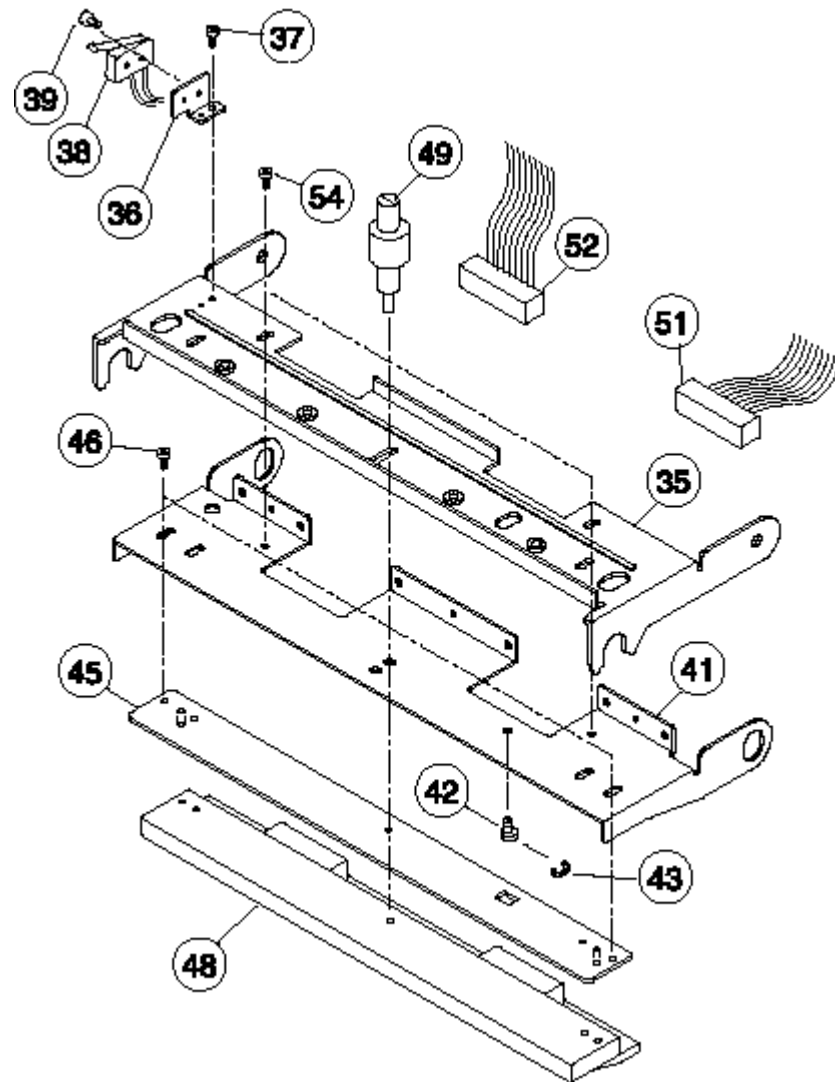
ITEM	CODE	DESCRIPTION	QTY
31	PE6A60600	HANDLE	1
32	PR4A60701	HANDLE	1
33	MD4300622	PAN HEAD SCREW	4
35	PA3A63101	HEAD FRAME	1
36	PA3A63200	HEAD OPEN SWITCH BRACKET	1
37	MD4300622	PAN HEAD SCREW	1
38	RH1A60501	HEAD OPEN SWITCH ASSY	1
39	MD0231022	PAN HEAD SCREW	1
41	PA3A63300	HEAD ADJUST PLATE	1
42	PB5A60000	POST(ECCENTRIC)	1
43	ND0030030	E-SNAP RING	1
45	PR1A60110	ADJUST PLATE(HEAD)	1
46	MD4301022	PAN HEAD SCREW	2
48	PR7A60101	THERMAL HEAD	1
49	P02551000	POST(HEAD)	1
51	RH1A60401	HDP CORD SET	1
52	RH1A60610	HDS CORD SET	1
54	MD4300822	PAN HEAD SCREW	2
55	NA1030022	WASHER	2

# Head Assembly





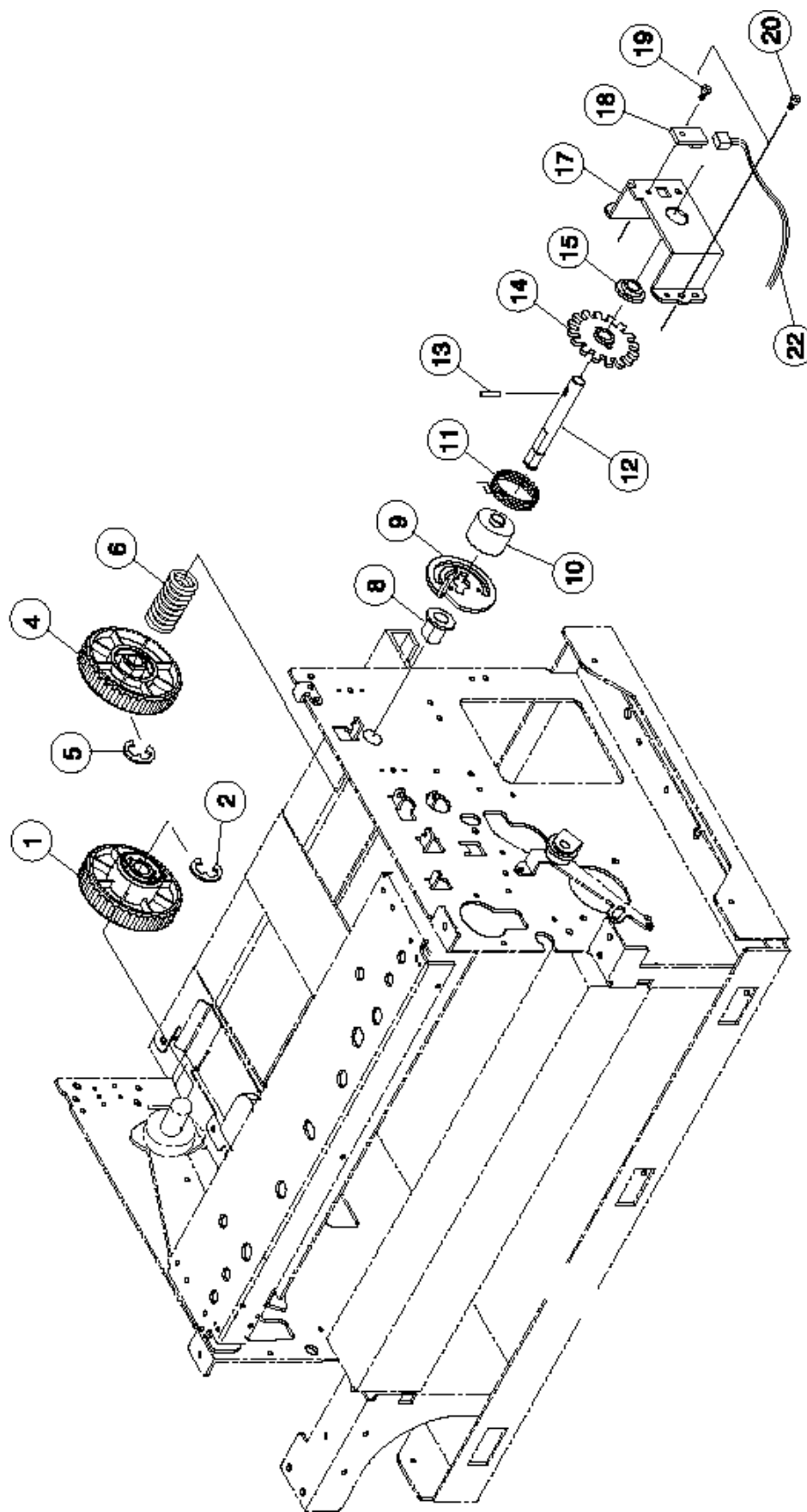
## Head Assembly (Cont)



## ***Ribbon Unwind Assembly***

NO.	CODE	DESCRIPTION	QTY
1	PE4A60200	RIBBON BOBBIN	1
2	ND0060030	E-SNAP RING	1
4	PE4A60000	RIBBON BOBBIN(TORQUE)	1
5	ND0060030	E-SNAP RING	1
6	PC1A60100	SPRING(BOBBIN)	1
8	PV0A60000	BEAR FIGHT	1
9	PA3A63500	SLACK PLATE(L)	1
10	PT9A60400	TORQUE LIMITTER	1
11	PC2A60201	TORSION SPRING	1
12	PB0A61200	RIBBON SHAFT(TORQUE)	1
13	NG2201430	PARALLEL PIN	1
14	PE2A60000	ENCODER PLATE	1
15	PT2A60300	BEAR FIGHT	1
17	PA3A60200	RIBBON BRACKET	1
18	RJ1A60601	RIBBON SENSOR PCB	1
19	MA2300422	SCREW	1
20	MD0300422	PAN HEAD SCREW	2
22	RH1A61300	RIBBON SENSOR CABLE	1

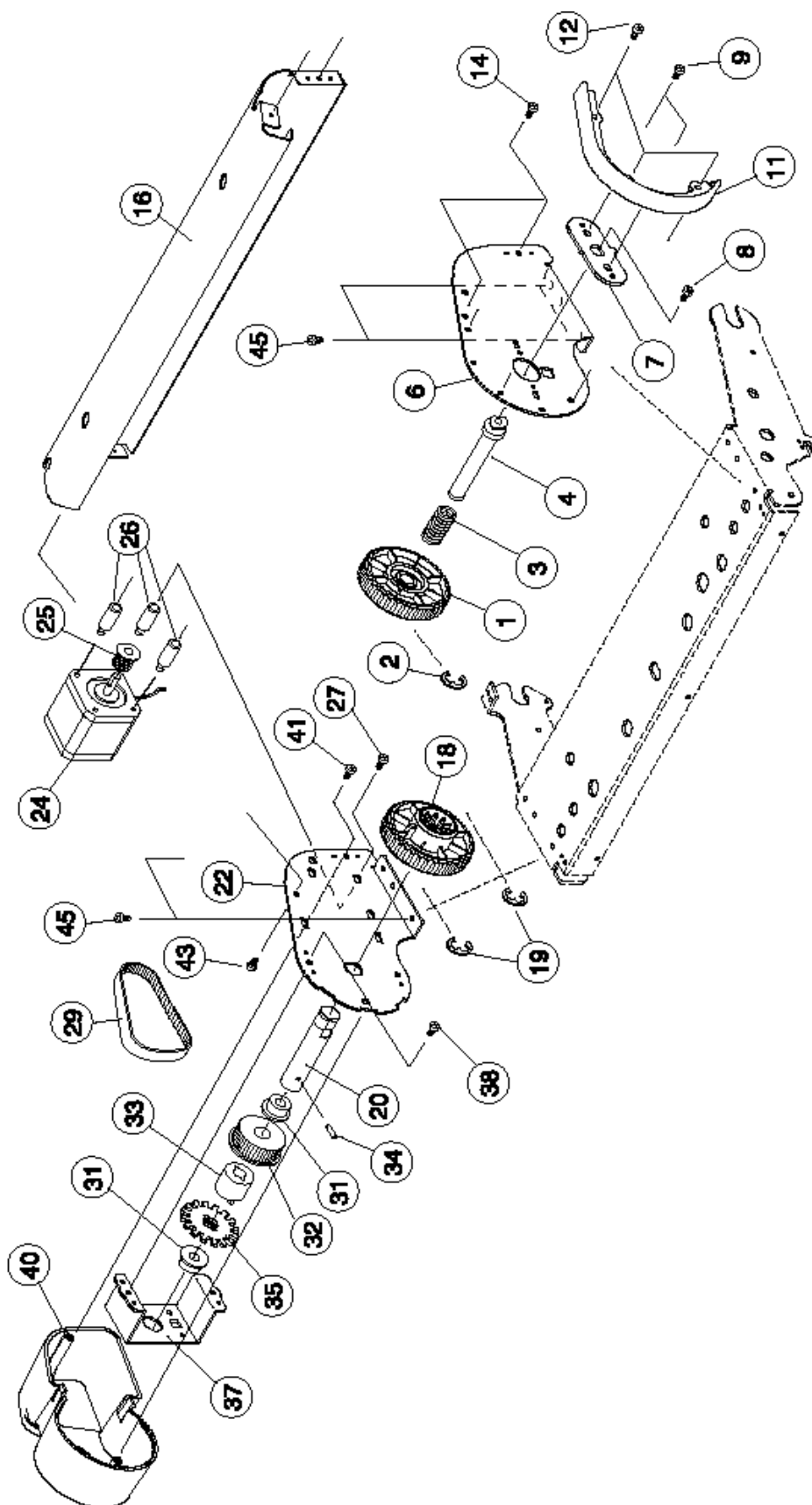
# Ribbon Unwind Assembly



## Ribbon Rewind Assembly

NO.	CODE	DESCRIPTION	QTY
1	PE4A60200	RIBBON BOBBIN	1
2	ND0060030	E-SNAP RING	1
3	PC1A60100	SPRING(BOBBIN)	1
4	PB0A61300	RIBBON SHAFT	1
6	PA3A63600	RIBBON FRAME(R)	1
7	PA2A60300	PLATE(RIBBON ADJUST)	1
8	MD4400822	PAN HEAD SCREW	1
9	MD4300622	PAN HEAD SCREW	2
11	PE6A60101	EDGE COVER	1
12	PT9500200	NYLON RIVET	3
14	MD4300622	PAN HEAD SCREW	2
16	PA3A63900	COVER	1
18	PE4A60000	RIBBON BOBBIN(TORQUE)	1
19	ND0060030	E-SNAP RING	2
20	PB0A61200	RIBBON SHAFT(TORQUE)	1
22	PA3A63700	RIBBON FRAME(L)	1
24	RH1A61801	STEPPER MOTOR	1
25	PE8A60300	PULLEY	1
26	PB0A61401	STUD (RIBBON MOTOR)	3
27	MD4300622	PAN HEAD SCREW	3
29	PU3204060	TIMING BELT	1
31	PT2A60300	BEAR FIGHT	2
32	PE8A60200	PULLEY	1
33	P00005000	TORQUE LIMITER	1
34	NG2201430	PARALLEL PIN	1
35	PE2A60000	ENCODER PLATE	1
37	PA3A63800	RIBBON BRACKET(L)	1
38	MD4300622	PAN HEAD SCREW	2
40	PE6A60201	MOTOR COVER	1
41	MH9300822	P-TIGHT SCREW	2
43	MD4300622	PAN HEAD SCREW	2
45	MD4300622	PAN HEAD SCREW	4

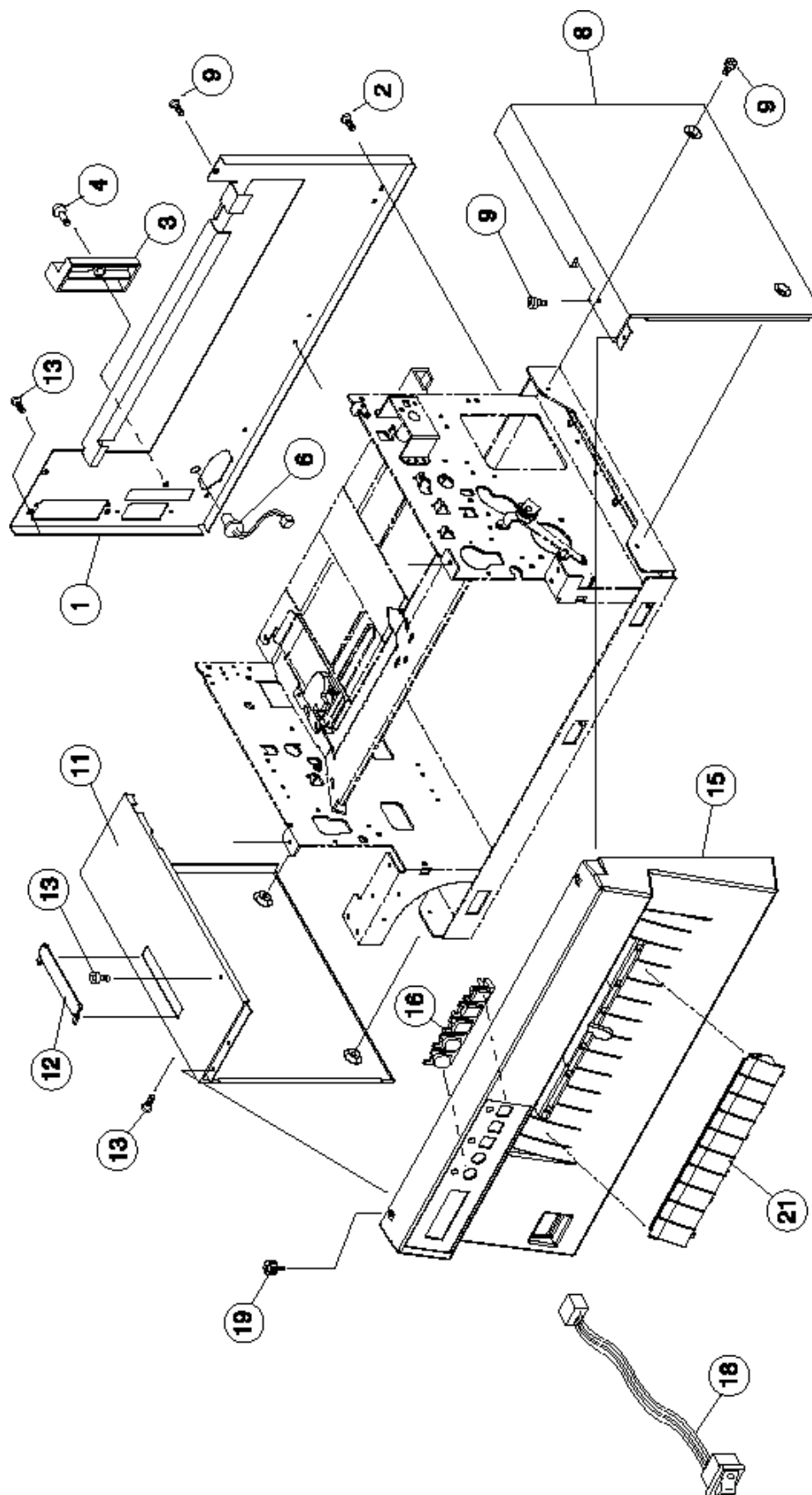
# Ribbon Rewind Assembly



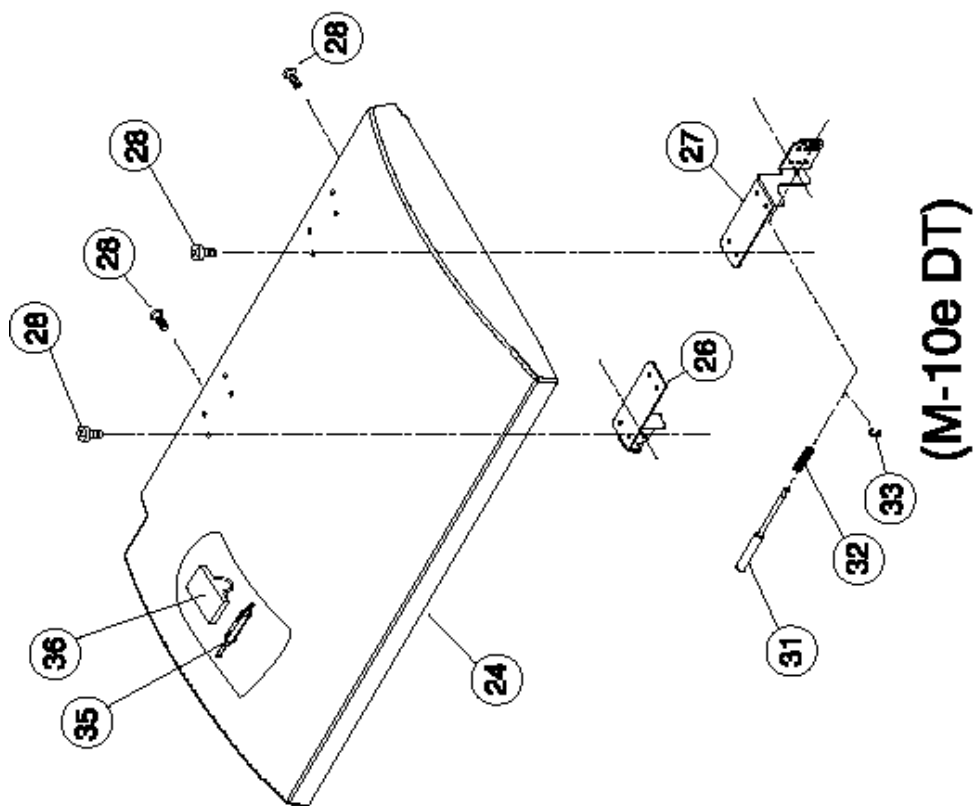
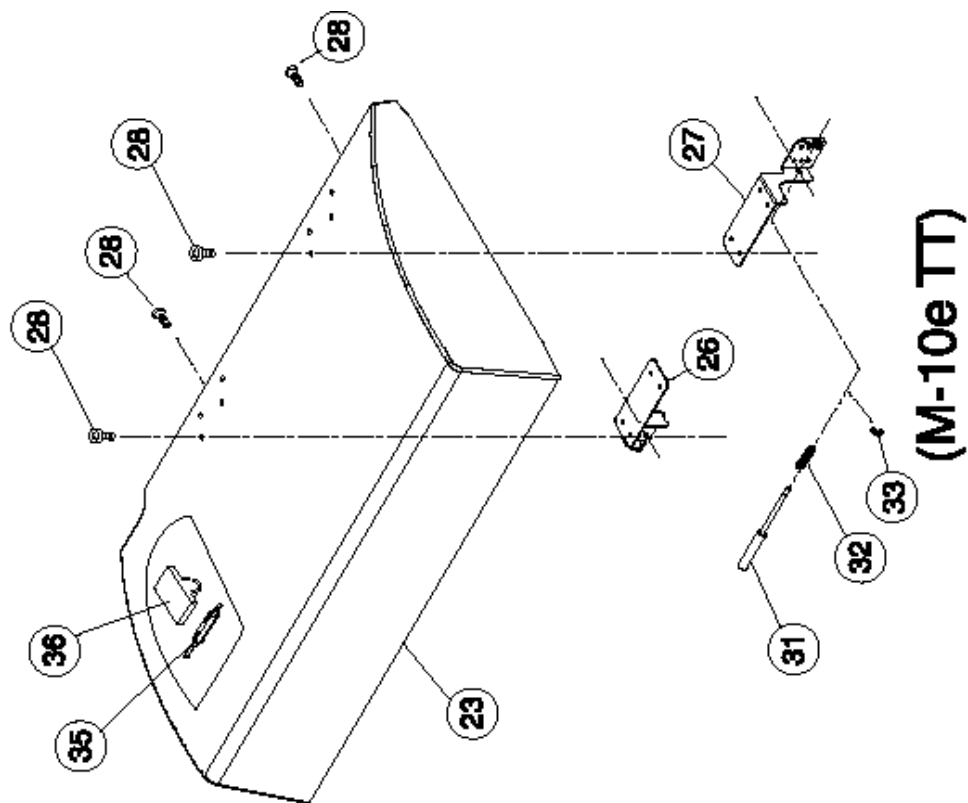
## Cover Assembly

NO.	CODE	DESCRIPTION	QTY
1	R01457000	REAR COVER SET	1
2	MA2300622	BIND SCREW	3
3	PE6771001	MEMORY CARD COVER	1
4	PB5A20001	HEAD SCREW	1
6	RH1A61601	LED CABLE ASSY	1
8	PH1A60100	SIDE COVER(R)	1
9	MA2300622	BIND SCREW	4
11	R01442000	SIDE COVER(L)SET	1
12	PE6A60300	COVER(DSW)	1
13	MA2300622	BIND SCREW	4
15	R01114000	FRONT COVER	1
16	PZ0A60300	KEY TOP	1
18	RH1A60100	POWER SWITCH CABLE ASSY	1
19	MA2300622	BIND SCREW	2
21	PH0A60100	CUTTER COVER	1
23	PH1A60300	TOP COVER(T)	1
24	PH1A60400	TOP COVER(D)	1
26	PA3A64800	HINGE PLATE(L)	1
27	PA3A64900	HINGE PLATE(R)	1
28	MA2300622	BIND SCREW	16
31	PB0A61500	RELEASE SHAFT	1
32	PC1A60201	SPRING	1
33	ND0030030	E-SNAP RING	1
35	PE6A21900	MICRO DRIVER	1
36	JG100551A	CK CLAMP	1

# Cover Assembly



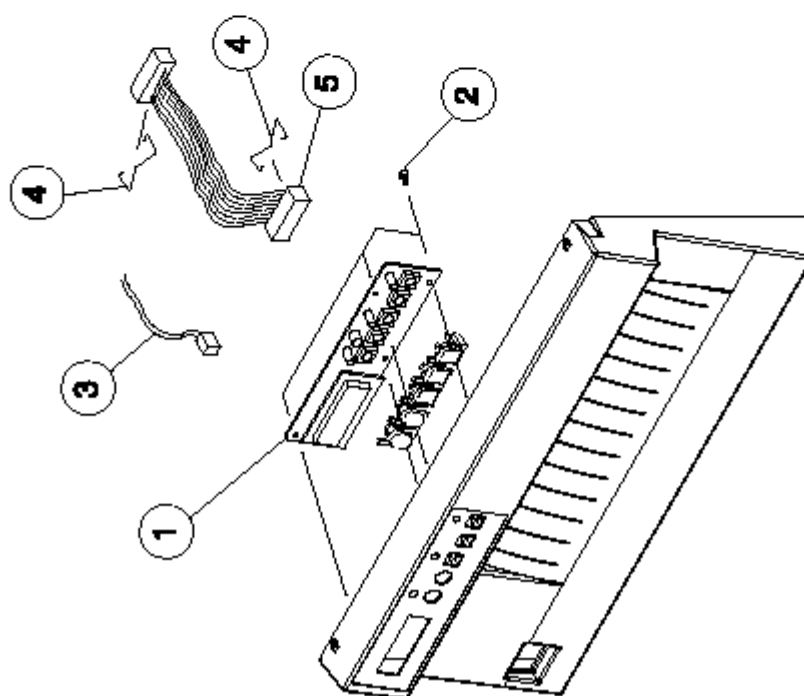
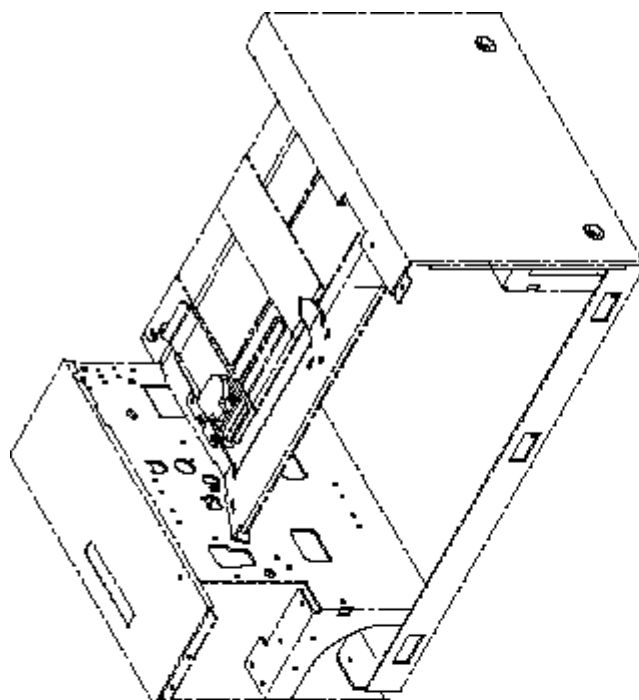
## Cover Assembly





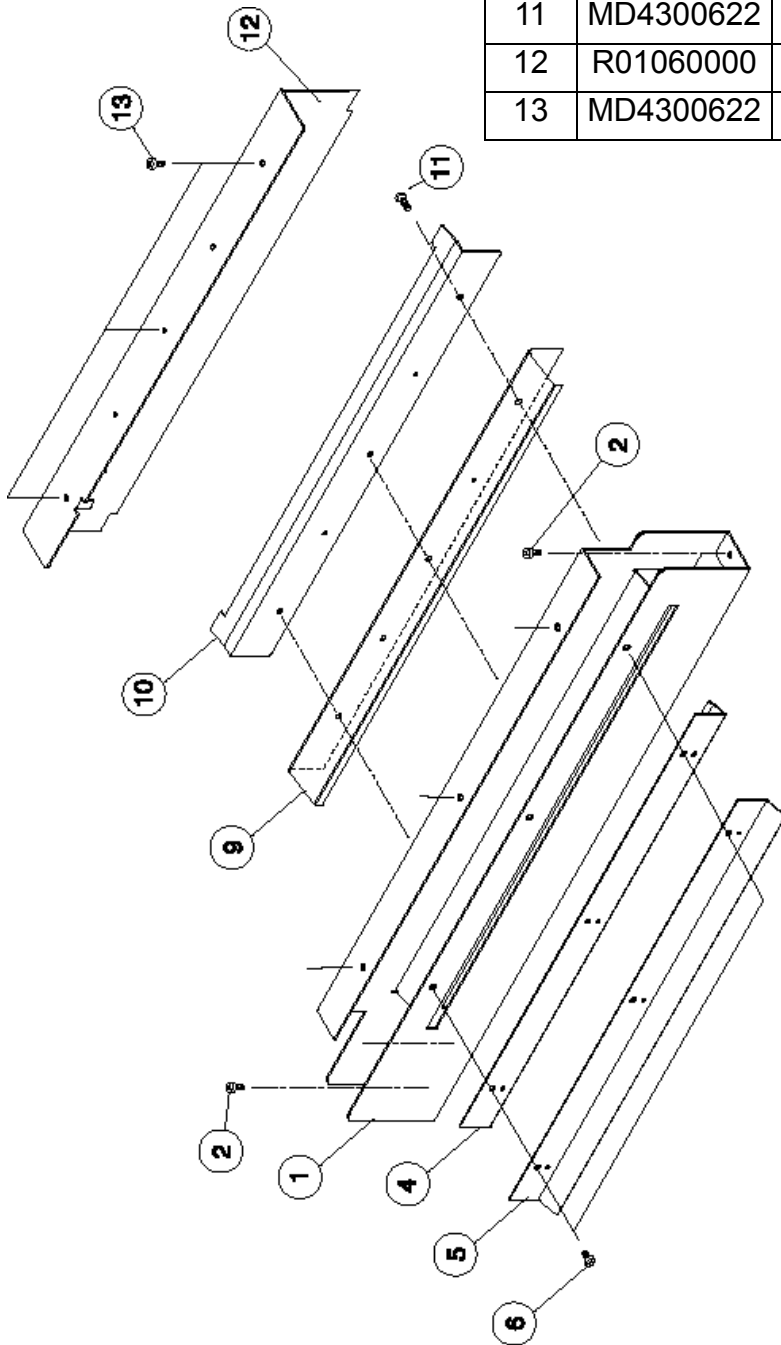
## Keyboard Assembly

NO.	CODE	DESCRIPTION	QTY
1	PR7A61110	KB PCB SET	1
2	MH0300821	P-TIGHT SCREW	4
3	RH1A60700	KB CABLE SET	1
4	PC9730100	SPRING(LOCK)	2
5	RH1A60800	LCD CABLE SET	1



## Tear Off Cutter Assembly

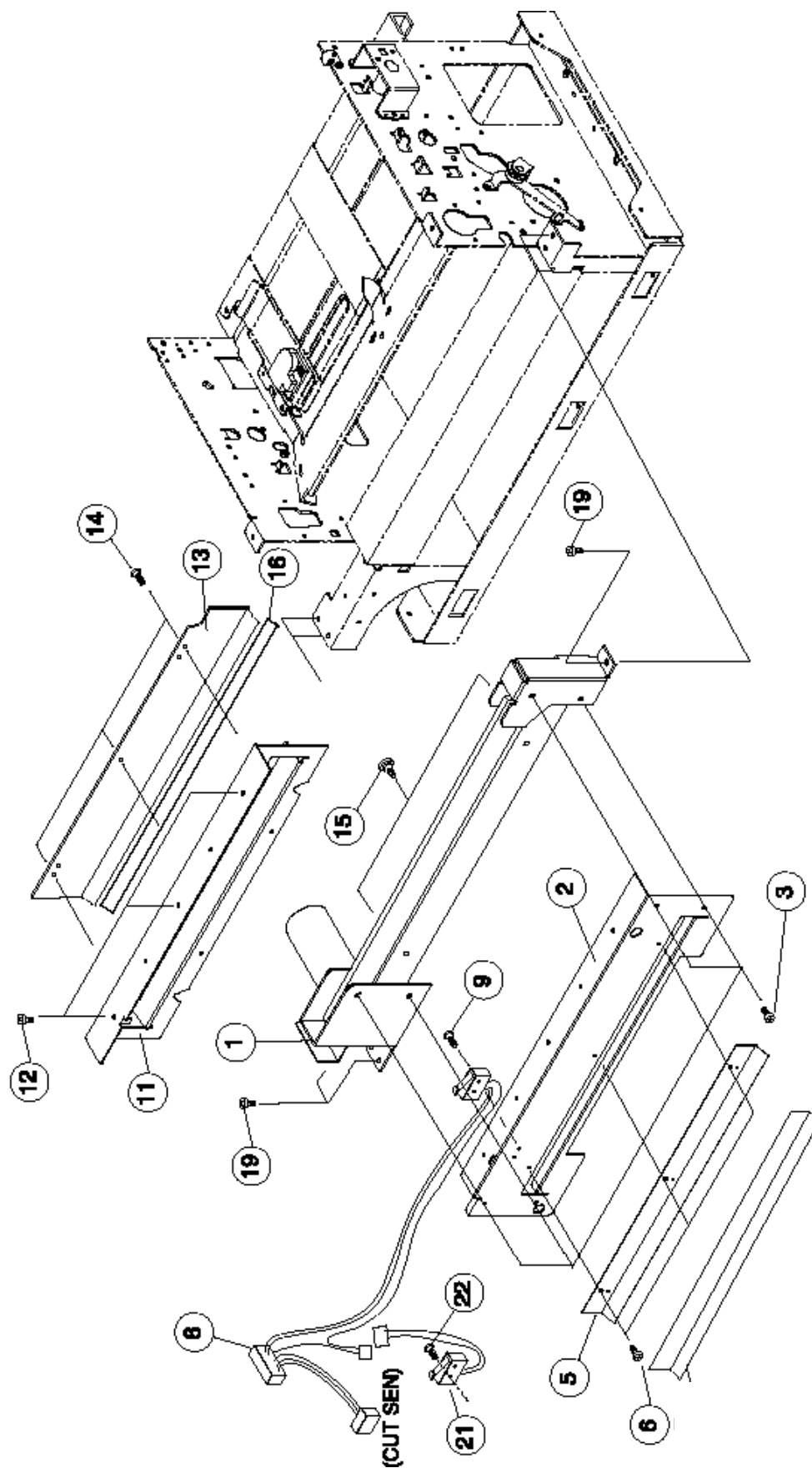
NO.	CODE	DESCRIPTION	QTY
1	PA3A64500	TEAR OFF CUTTER	1
2	MD4300622	PAN HEAD SCREW	3
4	PA3A64100	CUTTER GUIDE(A)	1
5	PA3A66000	CUTTER GUIDE(C)	1
6	MD4300622	PAN HEAD SCREW	3
9	PA3A64600	TEAR OFF CUTTER GUIDE	1
10	PR4A60400	CUTTER GUIDE UNDER(B)	1
11	MD4300622	PAN HEAD SCREW	3
12	R01060000	CUTTER BRACKET(B)	1
13	MD4300622	PAN HEAD SCREW	3



## Cutter Assembly (Option)

NO.	CODE	DESCRIPTION	QTY
1	PK1A60010	CUTTER UNIT	1
2	P00751000	CUTTER BRACKET(A)SET	1
3	MD4300622	PAN HEAD SCREW	4
5	P00761000	CUTTER GUIDE(D)	1
6	MD4300622	PAN HEAD SCREW	3
8	RH1A61901	CUTTER SENSOR CABLE ASSY	1
9	MD4231022	PAN HEAD SCREW	1
11	R01059000	CUTTER BRACKET(C)	1
12	MD4300622	PAN HEAD SCREW	3
13	P00748000	CUTTER GUIDE TOP(D)	1
14	MD4300622	PAN HEAD SCREW	3
15	PB9A60200	GUIDE SCREW	2
16	P00749000	CT GUIDE SHEET B	1
19	MD4401022	PAN HEAD SCREW	3
21	RH1A62001	CUTTER SWITCH CABLE ASSY	1
22	MH0231022	P TIGHT SCREW	1

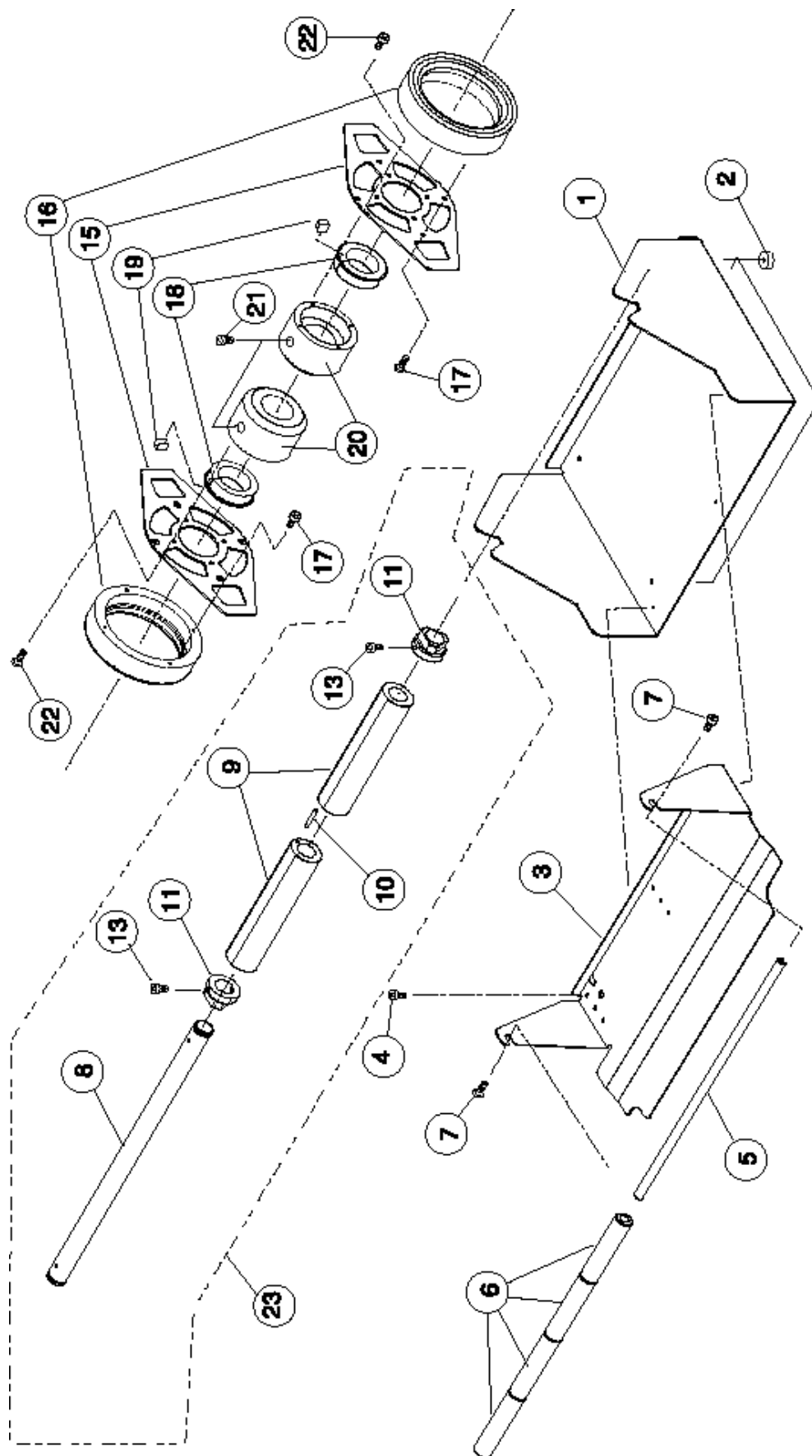
## Cutter Assembly (Option)



## Unwind Assembly (Option)

NO.	CODE	DESCRIPTION	QTY
1	PA5A60200	FRAME	1
2	PT6680100	RUBBER FOOT	4
3	PA3A65502	ROLLER BRACKET	1
4	MD4300622	PAN HEAD SCREW	3
5	PB0A61800	SHAFT(ROLLER)	1
6	PB3A60400	ROLLER	4
7	MD4401022	PAN HEAD SCREW	2
8	PB0A61901	SHAFT	1
9	PB3A60510	ROLL CORE(1.5)	2
10	NG2401030	PARALLEL PIN	1
11	PB2A60101	COLLAR	2
13	NG3403530	SPRING PIN	2
15	PA2A60401	ROLL GUIDE	2
16	PB1A60000	HANDLE	2
17	MA1400822	SCREW	8
18	PE4080200	GUIDE STOPPER	2
19	PA1210400	SPRING	2
20	PB4A60001	ROLL CORE(3)	2
21	PV0600100	HAND SCREW	2
22	MD4401022	PAN SCREW	8
23	PR1A60610	SHAFT	1

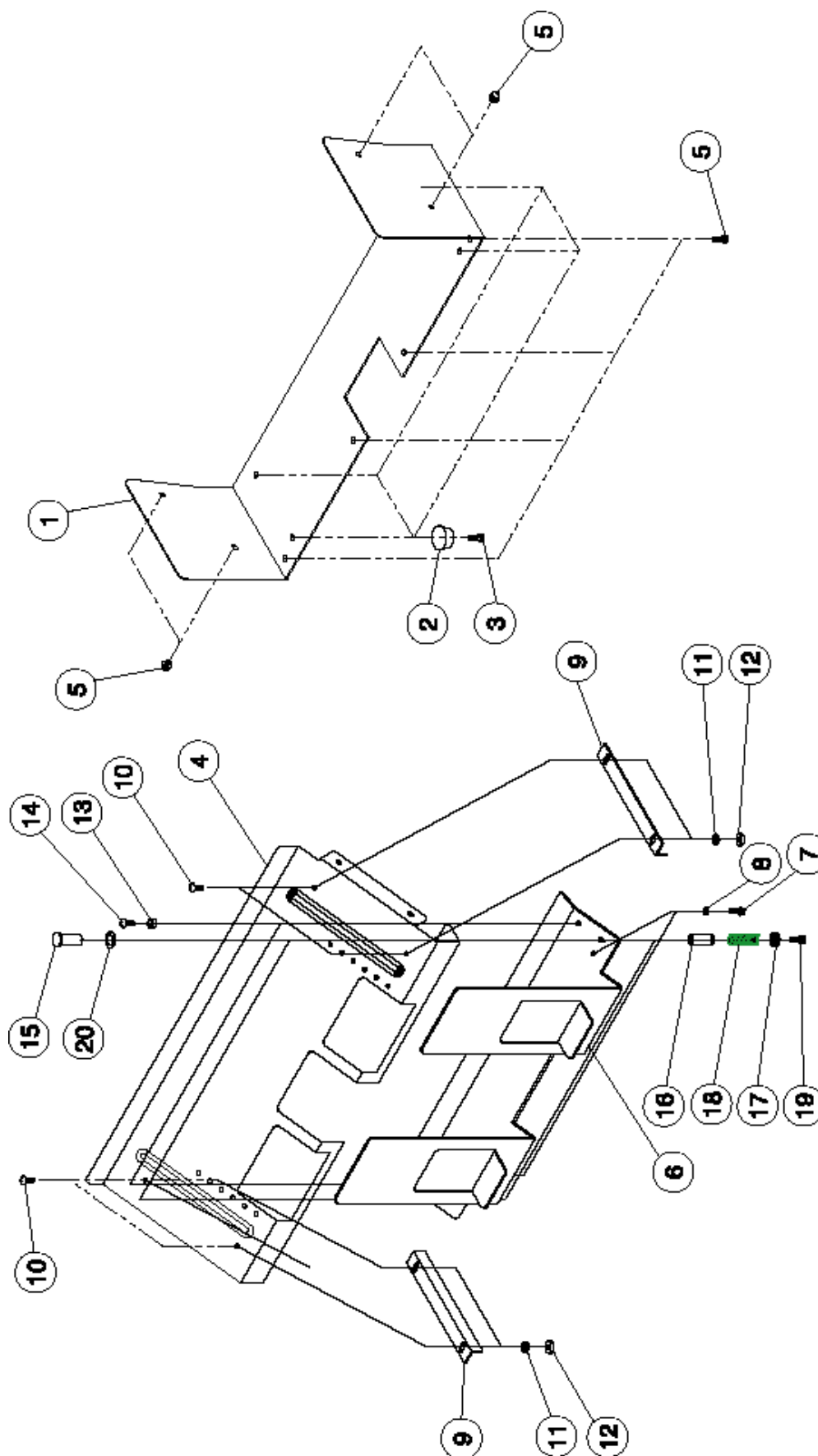
## Unwind Assembly (Option)



## Stacker Assembly (Option)

NO.	CODE.	DESCRIPTION	QTY
1	P00190000	BASE FRAME	1
2	P00222000	RUBBER FOOT	4
3	MA0300622	PAN HEAD SCREW	4
4	P00185000	CENTER FRAME	1
5	MA2300622	BIND SCREW	8
6	P00283000	ST.GUIDE SET	1
7	MA0300622	PAN HEAD SCREW	2
8	NB0030022	WASHER	2
9	P00191000	GUIDE BRACKET	2
10	MA1300622	SCREW	4
11	NA1030022	WASHER	4
12	MT1300522	HEX NUT	4
13	P00184000	COLLAR	2
14	MA7300522	SCREW	2
15	P00186000	SLIDE(POST)	2
16	P00187000	COLLAR	2
17	NA0040022	WASHER	2
18	PC1A10200	SPRING(BELT)	2
19	MD4301022	PAN HEAD SCREW	2
20	P00906000	POLY SLIDER	2

## Stacker Assembly (Option)





## Interface Board Assembly

NO.	CODE	DESCRIPTION	QTY
1	MD3300622	PAN HEAD SCREW	2
2	WCL404070	PARALLEL INTERFACE	1
4	WCL404060	INTERFACE	1
5	WCL404051	HIGH SPEED SERIAL INTERFACE	1
6	11S000158	10/100 ETHERNET INTERFACE	1
7	11S000136	(CX/TX INTERFACE)	1
8	11S000162	WIRELESS RF INTERFACE	1

